Hantavirus Control and Ec

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National Center for Emerging and Zoonotic Infectious Disease
Centers for Disease Control and Prevention, Atlanta

I. **Introduction**
II. HPS prevention: Clean up, trap up, seal up
III. Who is the Viral Special Pathogens Branch?
IV. Hantavirus/HPS refresher
V. Yosemite HPS 2012
VI. Health education collaborations with Diné College
VII. Next steps

I. Introduction
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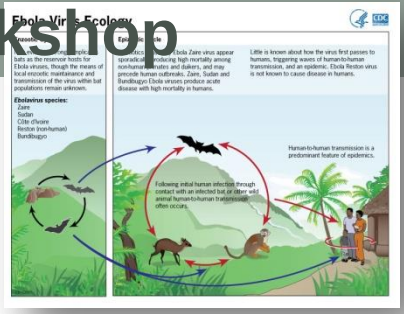
III. Who is the Viral Special Pathogens Branch?
IV. Hantavirus/HPS refresher
V. Yosemite HPS 2012
VI. Health education collaborations with Diné College
VII. Next steps

HPS Prevention

- Clean Up
  - Use gloves and disinfectant to clean up rodents, droppings, or nesting materials
  - Well-ventilated space
- Trap Up
  - Snap traps located properly
- Seal Up
  - Reduce rodent access to buildings, eliminate harborage sites
  - *Most important intervention for prevention*

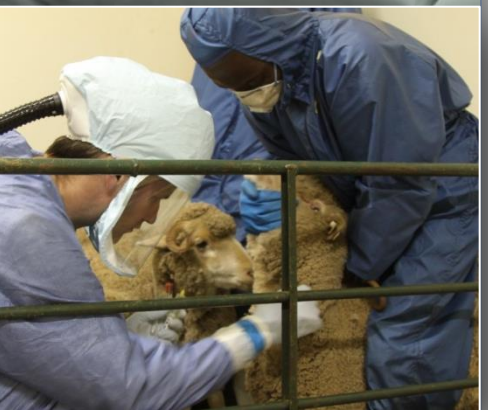
I. Introduction
II. HPS prevention: Clean up, trap up, seal up
III. **Who is the Viral Special Pathogens Branch?**
IV. Hantavirus/HPS refresher
V. Yosemite HPS 2012
VI. Health education collaborations with Diné College
VII. Next steps

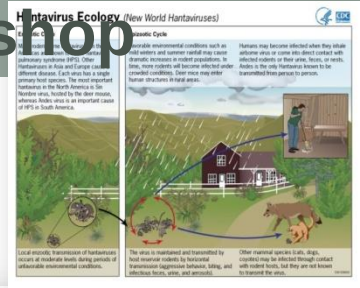
Who is the Viral Special Pathogens Branch (VSPB)?



- Provides epidemic aid and conducts epidemiologic studies on the detection, prevention, and control of outbreaks of highly hazardous viral diseases;
- provides primary isolation, identification, and characterization of highly hazardous disease agents that require biosafety level 3 or biosafety level 4 laboratory conditions for their safe handling;
- develops, evaluates, and improves methods for treatment, prevention, and laboratory diagnosis of hazardous disease agents;
- conducts laboratory, clinical, and epidemiologic investigations on the pathogenesis, pathophysiology, and prevention of viral infections caused by highly hazardous viruses;
- provides consultation on the clinical and epidemiologic management of suspected cases and/or epidemics of these diseases;
- consults with national and international scientists on the design, staffing, and efficient operation of a high hazard pathogen laboratory program;
- serves as a WHO Collaborating Center for Virus Reference and Research for Viral Hemorrhagic Fevers; and
- **develops and evaluates health education programs for educating the general public and health professionals about infection, treatment, infection control in clinical settings, prevention, and laboratory diagnosis of highly hazardous viral diseases.**

Who is VSPB?




Hantavirus Ecology (New World Hantaviruses)
Zoonotic Cycle

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II. HPS prevention: Clean up, trap up, seal up
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IV. **Hantavirus/HPS refresher**
V. Yosemite HPS 2012
VI. Health education collaborations with Diné College
VII. Next steps

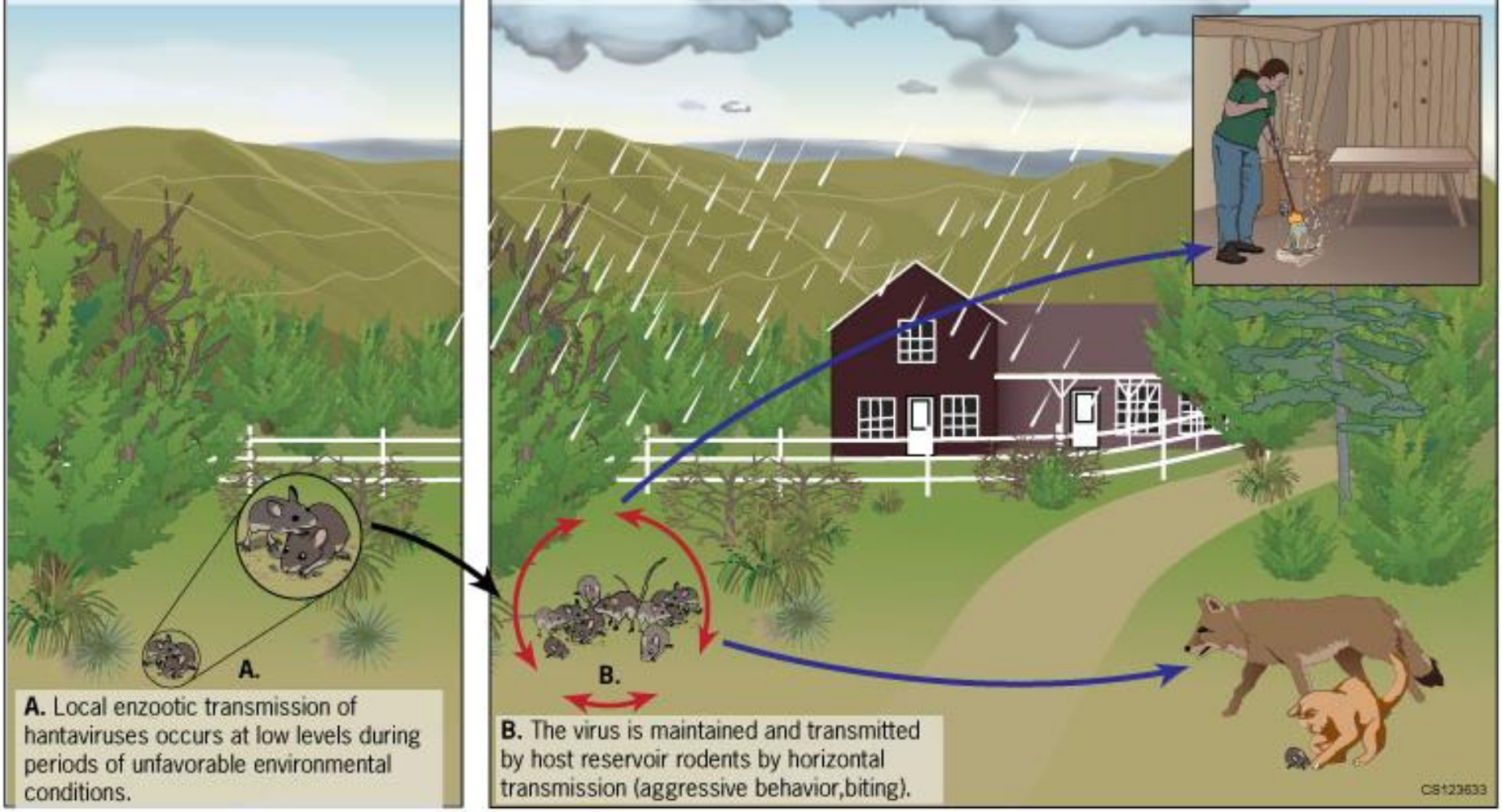
Hanta Virus Ecology

Enzootic Cycle

Many hantaviruses are known to cause hantavirus pulmonary syndrome (HPS). Each virus has a single primary host. The most important hantavirus in the US in the Sin Nombre virus, hosted by the deer mouse.

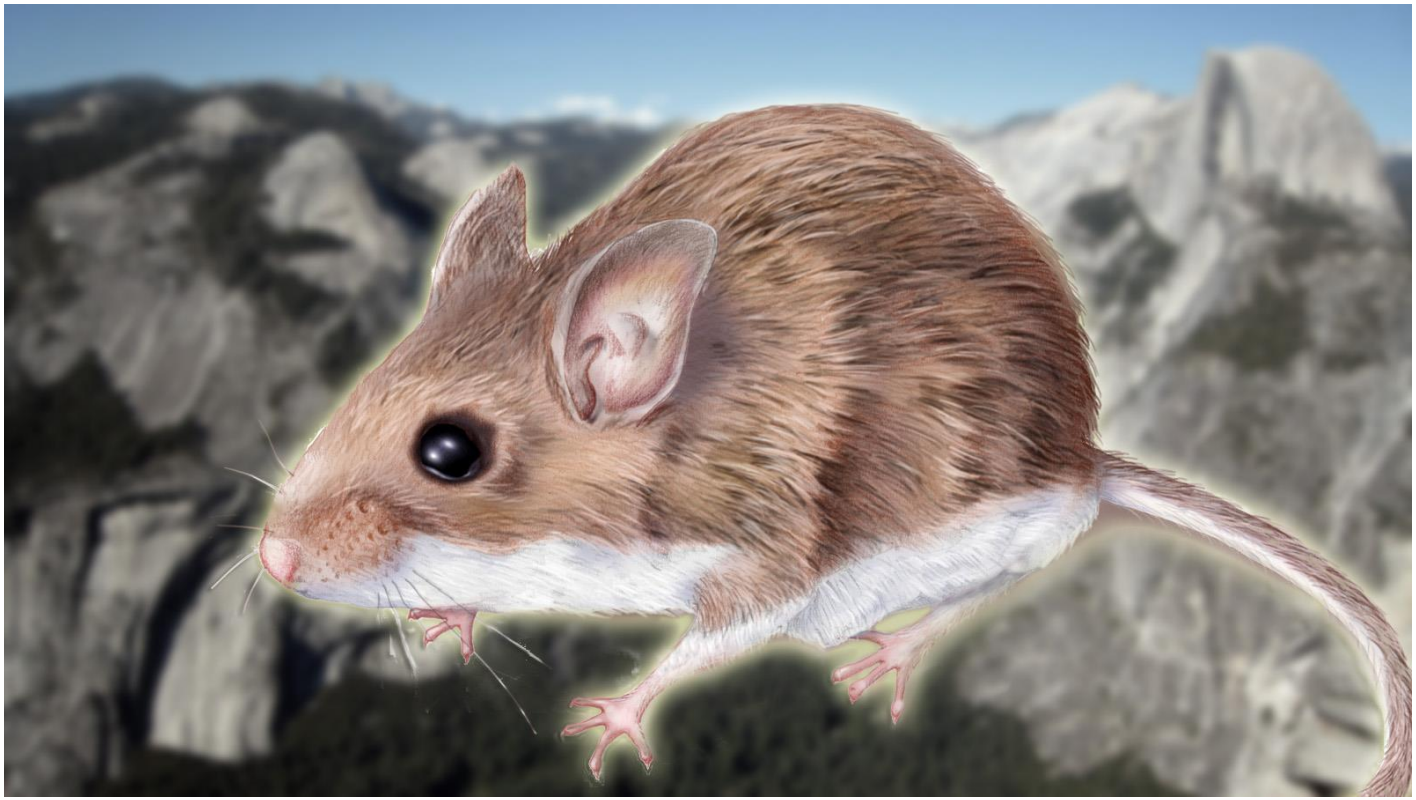
Epizootic Cycle

Favorable environmental conditions such as mild winters and summer rainfall may cause dramatic increases in rodent populations. More rodents become infected under crowded conditions. Deer mice may enter human structures in rural areas. Humans may become infected when they inhale airborne virus or come into direct contact with infected rodents or their urine, feces, or nests. Other mammal species (cats, dogs, coyotes) may be infected through contact with rodent hosts, but they are not known to transmit the virus.



A. Local enzootic transmission of hantaviruses occurs at low levels during periods of unfavorable environmental conditions.

B. The virus is maintained and transmitted by host reservoir rodents by horizontal transmission (aggressive behavior,biting).



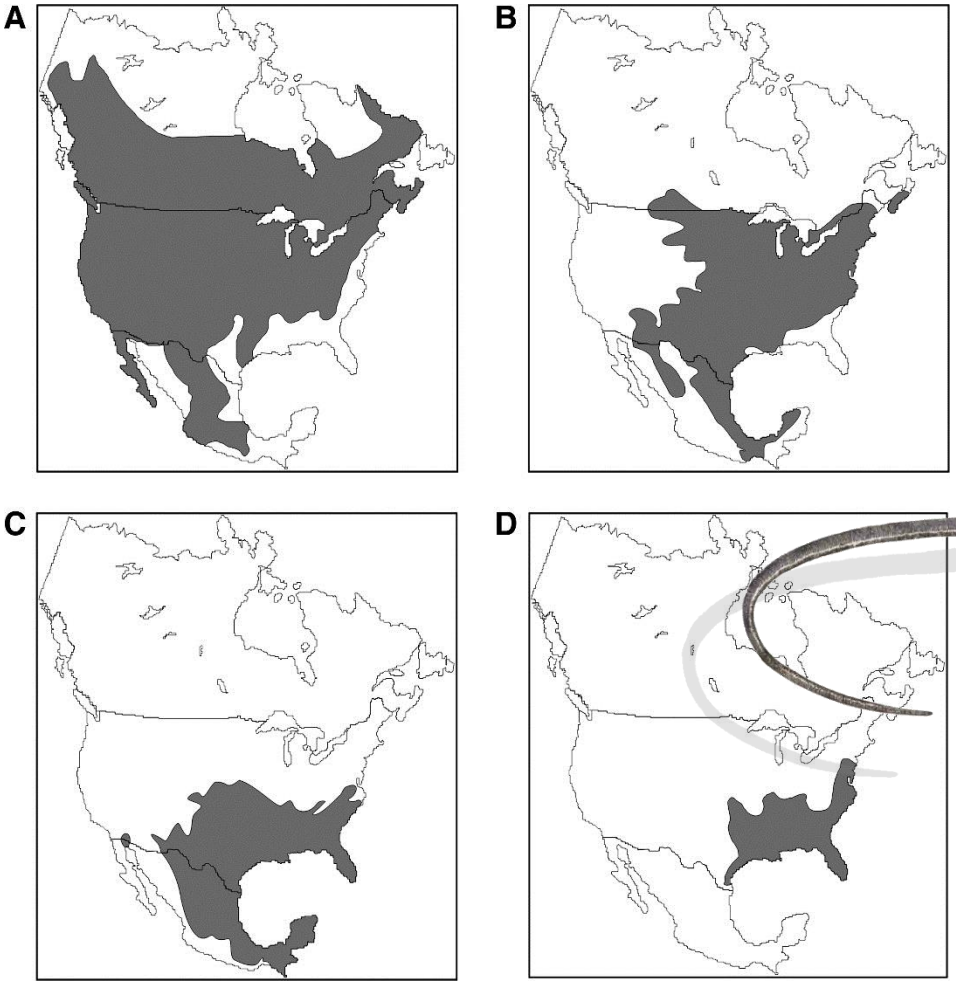
Deer mouse *(Peromyscus maniculatus)*

Carries **Sin Nombre hantavirus**

Virus shed in urine, feces, and saliva

Human infection occurs through inhalation of aerosolize
excreta and via direct contact from rodent bites

Distribution of hantavirus reservoirs

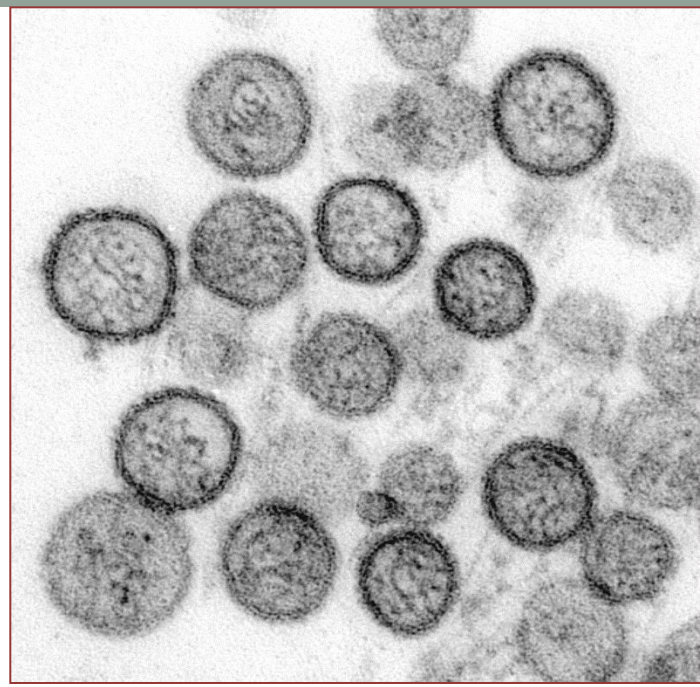


A. Deer mouse (Sin Nombre virus)
B. White-footed mouse (New York virus)
C. Hispid cotton rat (Black Creek Canal virus)
D. Rice rat (Bayou virus)

From: Mills et al, *Vector-Borne and Zoonotic Diseases* 2009: Epub ahead of print


Sin Nombre
Camp Ripley
New York
Prospect Hill
Monongahela
Bloodland Lake
Bayou
Black Creek Canal
Blue River
Muleshoe
Isla Vista
Limestone Canyon
El Moro Canyon
Playa de Oro
Río Segundo
Maporral
Caño Delgadito
Catacamas
Choclo
Calabazo
Castelo dos Sonhos
Laguna Negra
Araraquara
Juquitiba
Central Plata
Río Mearim
Anajatuba
Río Mamoré
Bermejo
Orán
Alto Paraguay
Itapúa
Andes
Maciel
HU39694
Lechiguanas
Pergamino

1993 Hantavirus Outbreak in Four Corners area



Scientific success story:

- New virus discovered (1993)
- Rodent reservoir identified (Deer mouse)
- Public health measures/education

Human tragedy:

- 32 deaths
- Disruption
- Stigmatization
- Lingering mistrust

Secret CIA files reveal ... GERM WARFARE TEST ACCIDENT KILLED NAVAJO INDIANS

THE MYSTERY disease ravaging Indians in the Southwest was triggered by a vicious germ warfare virus captured from Iraq during the Gulf War — and unleashed by the CIA!

An **EXAMINER** probe has exposed shocking evidence that the Central Intelligence Agency secretly spread the virus through Indian reservations to test its potency and set the stage for the development of a vaccine against it.

In a world-exclusive interview, a CIA source reveals: "The never-divulged capture of Saddam Hussein's germ warfare arsenal during Operation Desert Storm gave the agency the idea to mount its secret test program in some of America's low-population areas.

"These tests were intended to help the U.S. develop new vaccines against the horrible viral weapons.

"Nobody at the agency ever dreamed that the virus would prove totally resistant to all known vaccines.

"Now, there's a real fear that this whole program is about to become out of control. The desk jockeys in Washington never thought the virus would start striking innocent men, women and children on the Navajo lands."

The mystery illness, referred to as unknown respiratory distress syndrome — URDS for short — is blamed for at least 13 deaths in four Western states.

Medical investigators from the Centers for Disease Control and Prevention in Atlanta, the Indian Health Service and state health departments have fanned out across the Navajo nation in search of clues to the killer.

Theories on the cause include everything from contaminated water to a virus found in rat droppings. And while the debate rages, panic grows.

More than 600 calls an hour are coming in to area hotlines from frightened residents of Colorado, New Mexico, Arizona and Utah.

They're desperate for information about the disease, which begins with flu symptoms but quickly progresses to respiratory failure — and eventually death.

"It would be the perfect germ warfare virus," admits an expert with the United Nations. "It's similar enough to conventional flu, so it doesn't raise any red flags when the epidemic begins.

"But it's resistant to treatment, so it could take a heavy toll."

It wouldn't be the first time the U.S. government has subjected its citizens to the ravages of germ warfare, **The EXAMINER** has learned.

"Americans have been exposed to germ warfare tests in the name of scientific research — and Congress was fully informed of the experiments," explains Norm Covert, a spokesman for the Army's Medical and Research Development Command at Fort Detrick, Maryland.

"But we were very careful during these experiments," insists Covert, who works in the office where vaccines and antitoxins against potential biological weapons are constantly being developed and tested.

"The U.S. Army secretly sprayed clouds of bacteria over the San Francisco Bay area. The germs were released from a gun-like device attached to the back of a ship.

"Although the germs used were not considered harmful, one man, Edward Nevin, died mysteriously afterward. His family claims that he died as a result of our experiment."

Dr. Sanford Kuvin, a renowned expert in infectious disease research, confirms:

"The government has secretly tested germ warfare on millions of innocent Americans in crowded locations throughout the country.

"We were helplessly bombed with germs without our knowledge by our own people — and that's scary," says Kuvin, of West Palm Beach, Florida. "These toxic substances can cause death and disease in whole populations within minutes."

— MARTIN PETERS

DOUBLE TRAGEDY — Above: A young woman sobs over the death of her Navajo fiance while his mom offers support. At left: Another woman comforts her sister at an Indian hospital

'Congress was informed of similar experiments'

June 29, 1993/EXAMINER 7

TODAY'S FOCUS: HANTAVIRUS

Killer may have spread across U.S. unrecognized

New clues widen range of infection

By Mike Toner
STAFF WRITER

The virus responsible for this year's deadly outbreak of respiratory disease in the Southwest may have been causing sporadic, unrecognized cases of the disease throughout the United States for years, researchers reported Thursday.

With a precise new genetic description of the rodent-borne virus, scientists at the Centers for Disease Control and Prevention say they have confirmed scattered cases of the often-fatal hantavirus pulmonary syndrome in at least 12 states, some of which occurred as early as mid-1991.

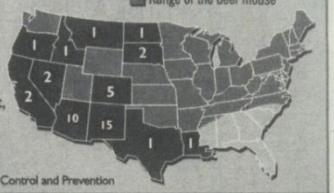
New evidence, described by CDC researchers in three forums over the last week, paints a very different picture of the mysterious "Four Corners virus" from the initial suspicion that it was some mutant new disease that suddenly began running amok in the desert Southwest.

"The general feeling now is that this virus has been present in wild rodent populations for a long time," says Stuart T. Nichol, chief of the CDC's molecular biology section, where the genetic structure of the virus is being mapped. "It is likely that it has been an agent of human disease — an unnoticed one — for quite a while."

In addition to helping researchers track the disease, knowledge of its genetic signature also is urgently needed to

Tracking a deadly virus

Since the hantavirus was discovered, 42 cases linked to the deer mouse have been confirmed nationwide. The deer mouse isn't found in most of the Southeast, but other rodents could be carrying the virus here.



Source: Centers for Disease Control and Prevention

RANDALL GRANT / Staff

Deadly ills test public health net

By Mike Toner
STAFF WRITER

Events have overtaken predictions by the U.S. Institute of Medicine, made barely a year ago, that the country is increasingly vulnerable to the emergence of deadly new diseases and resurgent old ones.

Although the hantavirus outbreak in the Southwest has grabbed most of the headlines, officials at the Centers for Disease Control and Prevention say it is only one of the "emergent diseases" to test the U.S. public health system this year.

In an article in the journal Science, James M. Hughes, director of the CDC's National Center for Infectious Diseases, and other senior officials warn

been firmly linked to the death of one person in Louisiana — and a suspected case of the disease in Mississippi.

Armed with the genetic signature of the viruses, health authorities are in the midst of a nationwide survey to see how widely hantaviruses occur. The CDC is testing 5,000 blood and tissue samples a month for signs of the viruses.

Because the major animal reservoir of the virus, the deer mouse, is one of the most abundant small mammals in the country, researchers say it may be present anywhere deer mice are found. Deer mice occur from the shores of Canada's Hudson Bay to the mountains of central Mexico.

"As we encounter more and more cases, the gaps in the map are filling in," says C.J. Peters, director of the CDC's special pathogens branch. "There is probably more virus out there than we can imagine."

But deer mice aren't the only carriers. In the Southwest, the virus has been detected in chipmunks and rabbits. And because deer mice do not occur in most of

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THE SANTA FE
NEW MEXICAN

No answers as more fall to mystery illness

By KAREN PETERSON
The New Mexican

State and federal public health officials remain baffled by a flu-like syndrome that claimed a 10th victim Saturday and sent three more people to the hospital over the weekend.

More than 50 members of the Indian Health Service, working with community volunteers, have spread over the Navajo reservation and other areas of northwestern New Mexico and northeastern Arizona in search of a common link between victims.

But Sunday, they still had no such links, nor could they yet say whether the victims had sickened or died after exposure to a toxic substance or as a result of an infectious disease.

"We've done a complete review of known toxins and infectious agents and none really fit," said Dr. Gary Simpson, a state medical investigator. "We're dealing with either a new agent or a very, very unusual manifestation of a known disease."

The syndrome, identified by acute respiratory distress, appears to be striking young, healthy people in the Four Corners area, most of them American Indians. Margaret Gallaher of the state Health Department said that of 25 known victims of the disease, 19 are Indians, most of them Navajo. Five of the victims were Anglo and one was Hispanic. Of the 10 dead, only one was not an Indian.

Three investigators from the national Centers for Disease Control in Atlanta have arrived in New Mexico to help with the search for a cause for the syndrome. State epidemiology and public health officials have been in contact with the center since first noticing the syndrome after the deaths of a Navajo couple earlier this month.

Tissue samples from several of the victims are being tested in Atlanta for evidence of DNA related to variety of rare disease agents. Dr. Jay Butler of the CDC said Sunday that results from the tests are expected within the next couple of days.

The latest victim of the illness was a 13-year-old girl, who collapsed at a party Friday and died Saturday in Gallup.

Symptoms of the illness, which mimics the common cold or flu, include muscle aches, headache, fever and conjunctivitis.

Two other people were diagnosed with the illness Friday and were taken to the University of New Mexico Hospital in Albuquerque.

A hospital spokesman said Sunday that two more patients suspected of having contracted the illness had been admitted. Public health officials said the total number of victims of the illness remains at 25 — about the same number as reported Friday —

Please see ILLNESS, Page A-2

Girls say no more 'boys will be boys'

The Associated Press

The leers and lurid comments started as soon as Cecilie Hentz left home in the morning — teasing, foul language, lewd remarks aimed at her and at her friends.

It continued throughout the day: Jokes about body parts,

In honor of women veterans

Panel to urge massive cuts in logging

The Associated Press

WASHINGTON — Government scientists will recommend that President Clinton reduce timber harvests in the Northwest's ancient forests by at least 60 percent from what they were in the mid-1980s, administration officials say.

None of the alternatives the scientists are devising would let loggers cut more than 2 billion board feet of wood a year from national forests in Oregon and Washington, said one official, speaking on the condition of ano-

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ALBUQUERQUE JOURNAL

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Desert Mystery: Death Toll at 10

It's an Epidemic, But 'Nothing Fits'

"We have not been able to identify any place where people have gone or any gathering in common. Nothing really fits ..."
– Dr. Ron Voorhees

Sickness, Toxin May Be Acting Together

By Rex Graham
JOURNAL STAFF WRITER

SANTA FE — Two unidentified suspects that are eluding medical sleuths might be to blame for the deadly respiratory illness striking people in the state, doctors said Sunday.

"The most likely explanation is it's not due to a single cause, but a confluence of causes," Dr. Edith Todd Umland, a public health physician with the state Department of Health, said at a news conference.

Researchers have ruled out a number of bacteria and viruses and said Sunday one likely suspect is an unusual bacterium.

An official with the Atlanta-based federal Centers for Disease Control and Prevention compared the New Mexico investigation to the hunt in 1976 and 1977 for the cause of a then-mysterious pneumonia that killed 29 people and made 182 others ill, all of whom had attended an American Legion convention in Philadelphia.

That illness is now known as Legionnaires' disease and is caused

MORE: See DOCTORS on PAGE A6

Illness May Not Be 'Highly Contagious,' State Doctor Says

By Leslie Linthicum
JOURNAL STAFF WRITER

The Four Corners mystery illness officially became an epidemic Sunday, and an entire intensive care unit of University Hospital in Albuquerque was set aside for stricken patients.

"I think we would classify this as an epidemic at this point," deputy state epidemiologist Dr. Ron Voorhees said Sunday. He said the number of cases of the unexplained illness, which is thought to be contagious, gives it epidemic status.

Still, officials stress they don't believe the mystery syndrome is highly contagious and haven't discouraged travel to the Four Corners or decided to quarantine the area.

Because there have been 25 cases in an area with a population of tens of thousands, "if this is a contagious agent, it is not a highly contagious agent that's putting people at risk," Voorhees said.

If the disease were highly contagious, hundreds of people would have gotten sick since the epidemic was first identified two weeks ago, state epidemiologist Dr. C. Mack Jewell said.

New Mexico Department of Health officials said Sunday three new cases had been confirmed overnight in patients from the Zuni, Crownpoint and Chinle, Ariz., areas and at least two patients were in critical condition. The official case count, however, dropped from 26 to 25 as new cases were added and other cases originally suspected of being the illness were ruled out. Of the 25 people who have been confirmed as having the illness, being called "unexplained adult respiratory distress syndrome," 10 have died. Six have recovered and are no longer hospitalized. Nine remain hospitalized, the most seriously ill at University Hospital. Others are at hospitals throughout the Navajo reservation and Ilties in the Four Corners area.

The health department is classifying any case of adult respiratory distress syndrome for which there

MORE: See ITS on PAGE A6

FIELD SURVEY

Some 50 field investigators are scattered across the Four Corners area interviewing relatives and neighbors of the afflicted. They are focusing on these areas:

1. Contact with livestock and domestic animals
2. Exposure to pesticides and herbicides
3. Exposure to cleaning agents
4. Foods, drugs and alcohol ingested
5. Use of herbal medicines
6. Recent travel
7. Contact with others who have become ill

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DESERT MYSTERY

Rodent Virus Suspected in Illness

Report Called Preliminary But Possibly Important Breakthrough

Plague Sleuth Called Back To Give Info On Rodents

By Leslie Linthicum
JOURNAL STAFF WRITER

Ted L. Brown was called into the mystery disease investigation at the start. The mystery killer looked a lot like plague, and no one in New Mexico knows more about plague than Brown, an environmental specialist with the New Mexico Environment Department since 1973.

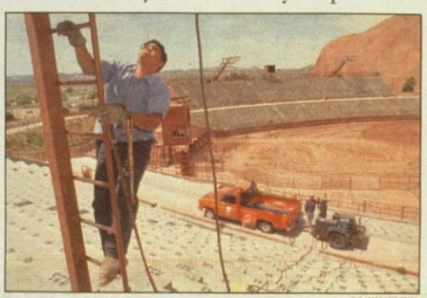
But plague, the bubonic and pneumonic bacterial curse that haunts New Mexico every spring and summer, was ruled out early in the investigation. And Brown went back to catching fleas in rodent burrows and tracking the dozen or so cats that have come down with plague this year.

Brown was on the telephone Friday afternoon, trying to calm down a woman whose child was bitten by a rock squirrel at Bandelier National Monument, when he was interrupted by a frantic call from the mystery illness team.

The mystery killer had been tentatively identified as a virus associated with rodent droppings. And screens was back in the action.

The investigation into Hantaan virus, now the prime suspect as the cause of the killer Four Corners mystery disease, could end up matching the decades-long quest for the answers to plague, Brown said Friday.

And like plague in the early 1900s



Earl Pebilto works inside the arena of Red Rock State Park in Gallup, where a team-roping competition was to begin Friday. Park manager John Vidal said the three-day event was canceled due to the outbreak of the mystery illness. Health officials late Friday afternoon said the cause of the outbreak might be a virus found in rodent droppings.

THE ASSOCIATED PRESS

By Chuck McCutcheon
JOURNAL STAFF WRITER

An airborne virus transmitted by droppings and dried urine from field mice and other rodents has been identified as the possible cause of the Four Corners illness, state health officials said Friday.

In announcing what could be an important breakthrough in fighting the disease that has killed 11 people in New Mexico and Arizona, the officials emphasized they are not yet certain the virus — believed to be a Hantaan virus — is to blame. But they said they hope that by going public with their findings they can check the spread of the disease.

"We really want to emphasize this is very preliminary data," Dr. Norton Kalishman, the state Health Department's chief medical officer, said at a Santa Fe news conference. "The Centers for Disease Control has not confirmed this. But we felt it would be irresponsible if we did not present this to you."

Dr. Gary L. Simpson, the Health Department's medical director of infectious diseases, said several anti-viral drugs, including Ribavirin, have been shown to have been effective in treating the virus. He said information on those drugs has been sent to doctors.

Kalishman warned that a "cleansing process" involving medicine men on the Navajo reservation — where most of the 18 cases have occurred — could result in tiny particles of rodent droppings or dried urine becoming airborne.

"If that were to disturb the environment in any way, we would find that," he said.

Peterson Zah, president of the Navajo tribe, will make announcements on radio stations heard throughout the reservation appealing residents of general cleanliness precautions regarding rodent droppings, but he is offended by comments made about medicine men and will not ask them to discontinue ceremonies, his spokesman said.

"That just shows further ignorance of Navajo culture," spokesman Duane Beyal said late Friday. "Medicine men don't hold

Medicine Men Call For Prayers Against Illness

FRIDAY'S DEVELOPMENTS

■ Doctors say the cause of the mystery illness might be a Hantaan virus and that people might get ill by inhaling dried rodent droppings that become airborne.

■ A state environmental man later said

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Deer Mouse May Be Illness Culprit

DEER MICE POSSIBLE LINK TO MYSTERY ILLNESS

Deer mice, the rodents whose droppings may be linked to the Four Corners mystery illness, can live in a variety of regions of North America, ranging from mountain climates to swampy areas. Sometimes known as white-footed mice, the deer mouse can range from 2 to 8 inches long. The fur on the upper parts of their bodies is gray, with patches of white on the belly.

Reggie Fletcher, regional ecologist from the U.S. Forest Service, said deer mice can be found almost anywhere in New Mexico. They are most common in ponderosa pine regions, and also in northern sage grassland found in the Four Corners area.

"They will store grass seeds, flower heads and nuts in hollow logs," Fletcher said. "They will store what's available and what they can carry." Fletcher said the deer mouse is a key indication of diversity in the ecosystem, since the rodent is a major prey base for larger animals.

Tests Show Rodent Is Likely Carrier

By Rex Graham
JOURNAL STAFF WRITER

In a major breakthrough, test results point to the lowly deer mouse as the possible carrier for spreading the Four Corners mystery illness that's killed at least 16 people.

A preliminary report to be released Friday by the federal Centers for Disease Control and Prevention says 12 deer mice trapped in and near the homes of some of the mystery illness' victims tested positive for exposure to a Hantavirus.

Hantaviruses are known to be carried by rodents, but never to have caused the kind of severe respiratory disease that recently struck about 30 people in New Mexico, Arizona, Colorado and Utah.

The report says 42 rodents of different types were tested, and 12 of them turned up positive for exposure to a Hantavirus. "All 12 were of the species Peromyscus maniculatus (deer mouse)," said the report.

A copy of the report obtained by the Journal also gives another strong piece of evidence that links what researchers think is a new type of Hantavirus with the illness. Hantavirus genetic material was isolated from the tissues of two patients who died recently from the disease.

The findings were made possible by a sophisticated new test called a polymerase chain reaction that can detect tiny amounts of viral genetic material in diseased tissue. Officials also credit unprecedented cooperation between dozens of state and federal health experts for eliminating other possible causes of the epidemic.

For state health workers, many of whom have put in 16-hour days for a month, the CDC report is a watershed.

"We're ecstatic," Dr. Gary Simpson, medical director of infectious diseases for the New Mexico Department of Health, said in a telephone interview Wednesday. "We've come so far so quickly. All of us are tired. A lot of us are still close to patients' families and feel a lot of pain for them."

The tests did not confirm that the same Hantavirus was responsible for infecting both the mice and people. That association will be proved or disproved in the coming weeks.

The report also does not shed light on how people were infected.

"That's the piece that's still unknown. We still have that piece to figure out," said Dr. Norton Kalishman, chief medical officer for the state Department of Health.

Experts assume the victims be-

MORE: See ILLNESS on PAGE A2

■ Navajos face health issue C1

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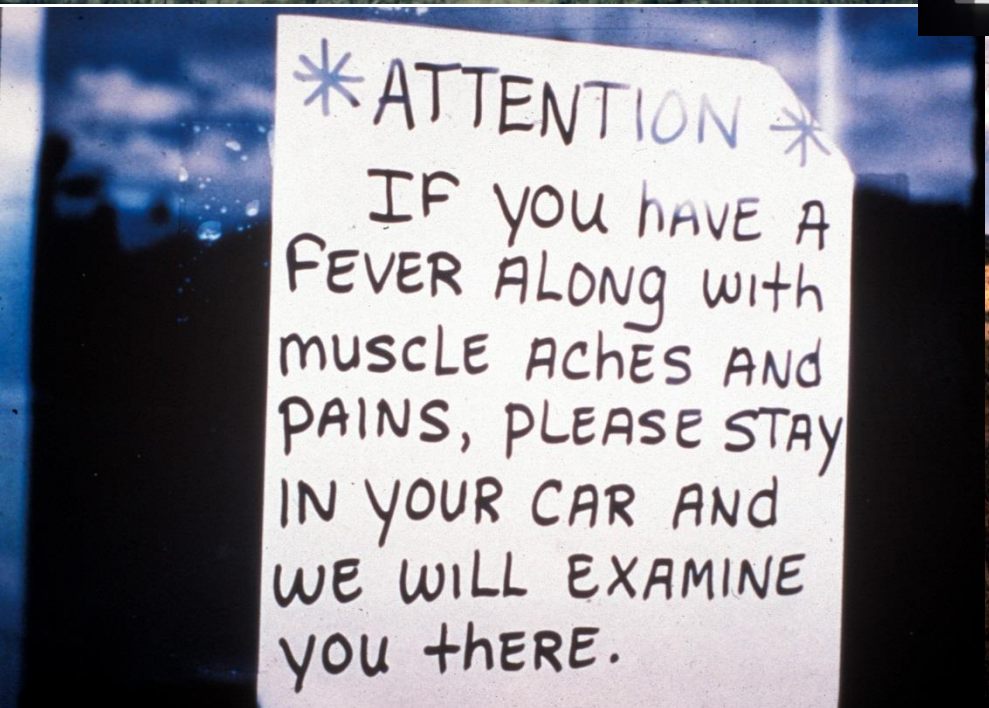
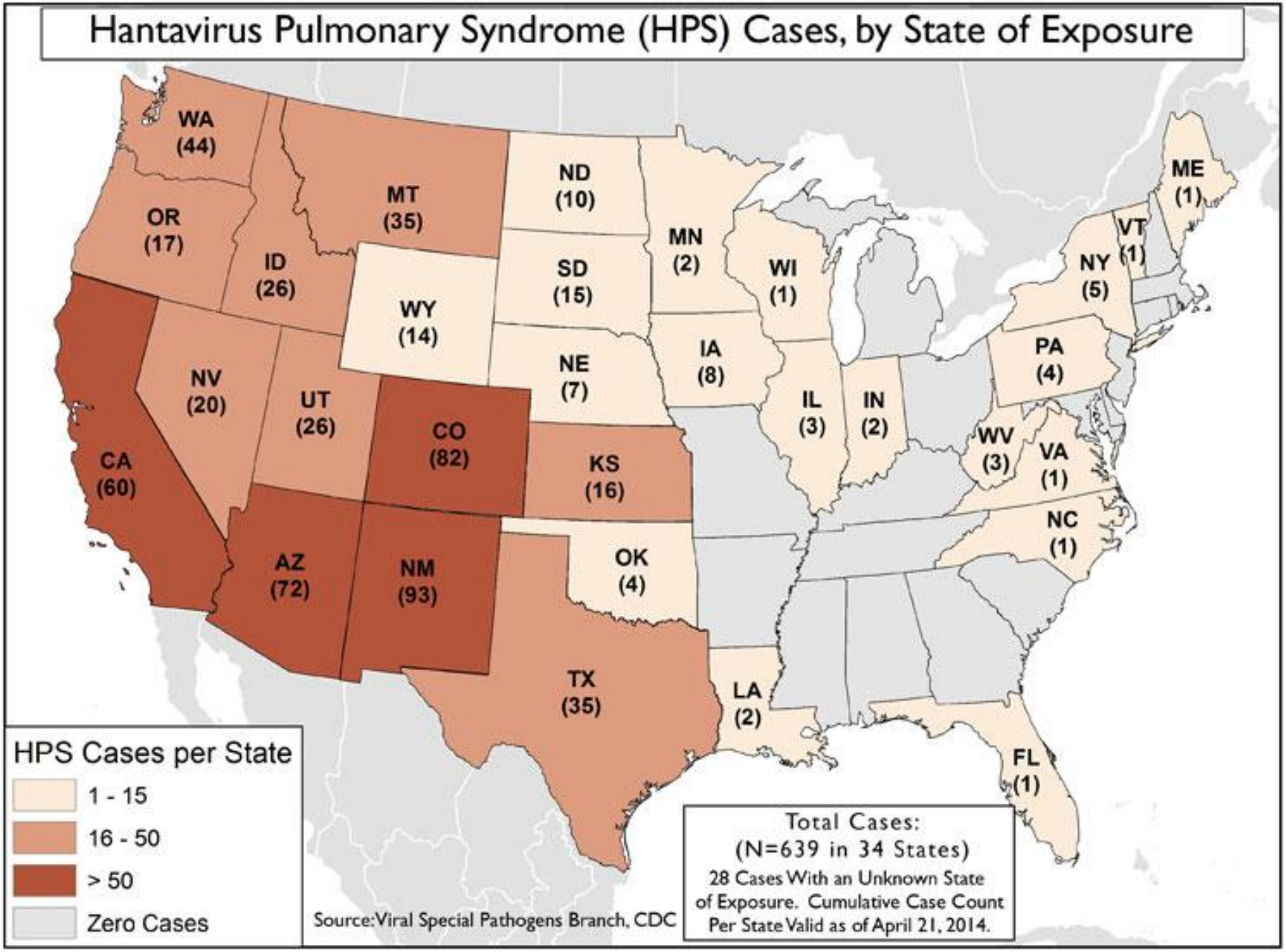


Hantavirus Cases in the United States

- 639 total reported cases to date (4/21/2014)
- 20 - 40 cases reported annually in US
- Most exposures in western US
- 36% fatality
- 17% in AI/AN population
- Outdoor/rural exposures → deer mouse habitat
  - Camping
  - Farming
  - Opening closed buildings
- Ongoing need for education for at-risk groups

Distribution of Deer mouse (*Peromyscus maniculatus*)


Hantavirus Pulmonary Syndrome (HPS) Cases, by State of Exposure
WA (44)
OR (17)
CA (60)
ID (26)
NV (20)
MT (35)
WY (14)
UT (26)
AZ (72)
CO (82)
NM (93)
ND (10)
SD (15)
NE (7)
KS (16)
OK (4)
TX (35)
MN (2)
IA (8)
MO
AR
LA (2)
WI (1)
IL (3)
IN (2)
MI
OH
KY
TN
MS
AL
GA
FL (1)
SC
NC (1)
VA (1)
WV (3)
PA (4)
NY (5)
VT (1)
ME (1)
HPS Cases per State
1 - 15
16 - 50
> 50
Zero Cases
Source: Viral Special Pathogens Branch, CDC
Total Cases:
(N=639 in 34 States)
28 Cases With an Unknown State of Exposure. Cumulative Case Count Per State Valid as of April 21, 2014.

HPS symptoms: 1 - 6 weeks after exposure

Initial Flu-like illness

- First 1-7 days
- Fever
- Headache
- Muscle aches
- Nausea
- Diarrhea
- Dry cough

Respiratory Phase

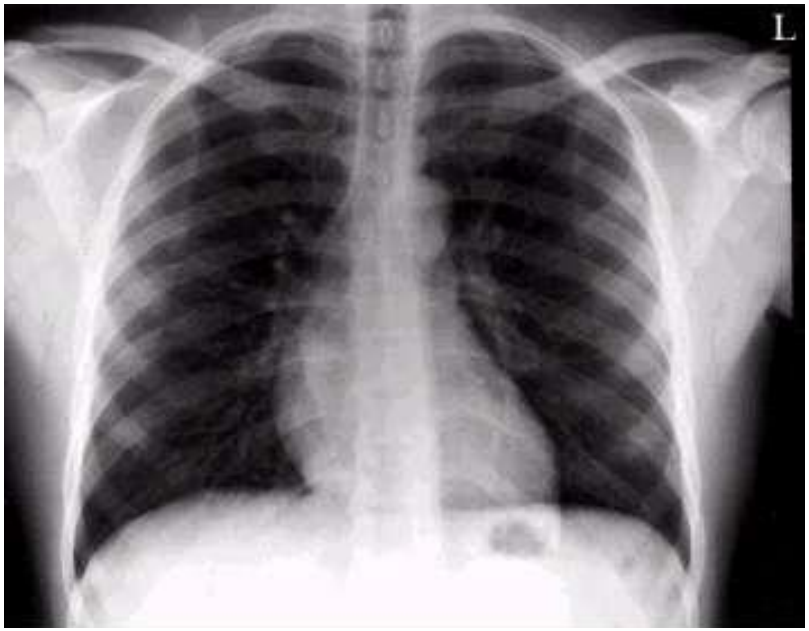
- Rapid onset
- Bilateral pulmonary infiltrates
- Thrombocytopenia
- Cardiac insufficiency
- Hospitalization and critical/supportive care needed

HPS symptoms: 1 - 6 weeks after exposure

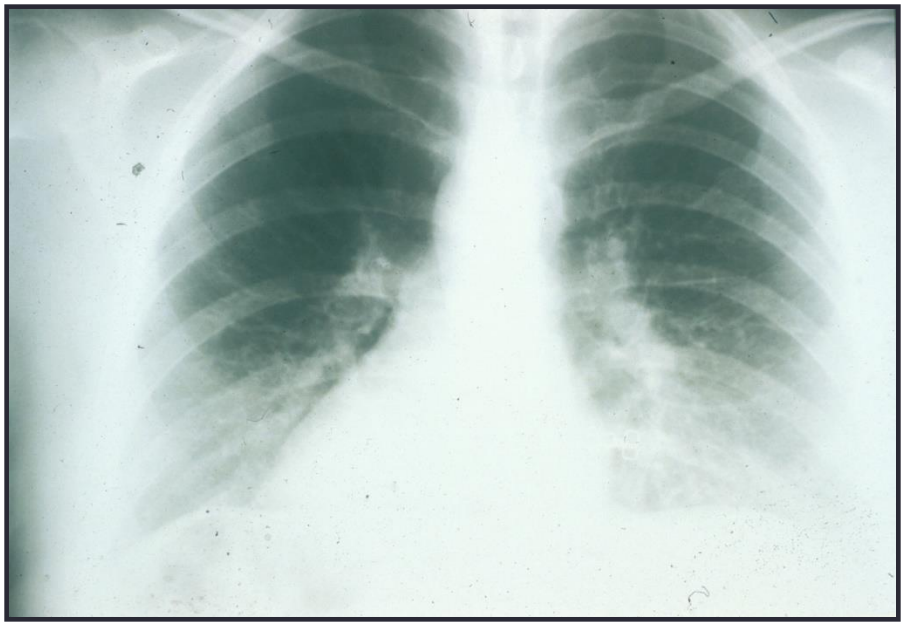
Initial Flu-like illness ⇒ Respiratory Phase

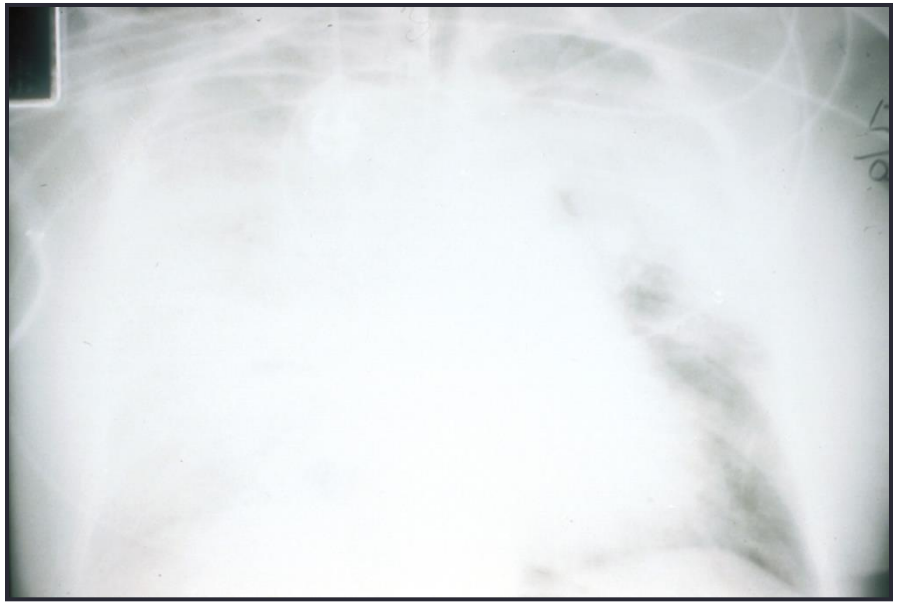
- No person-to-person transmission documented in North America
- *Most* human infections symptomatic

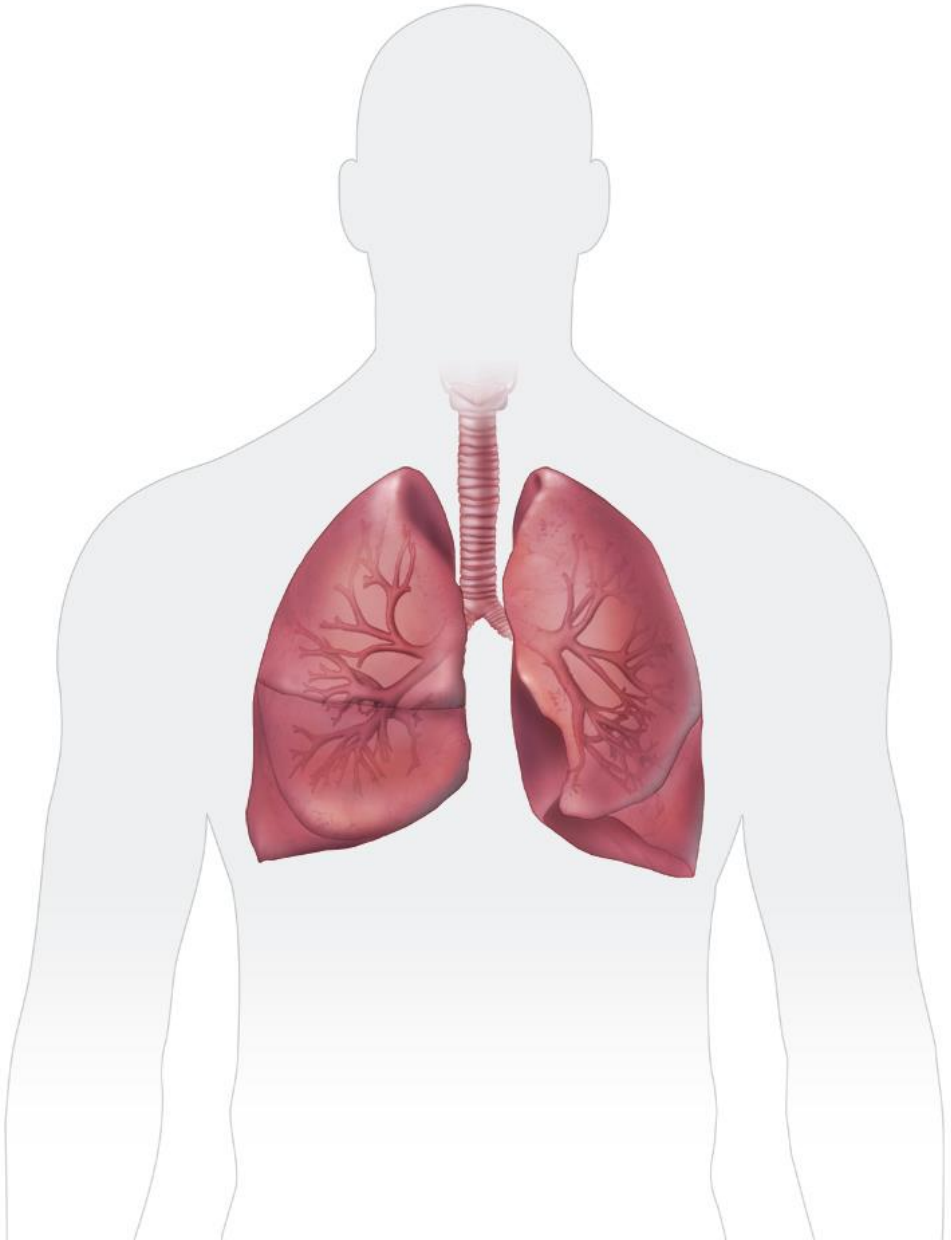
NORMAL Chest X-Ray

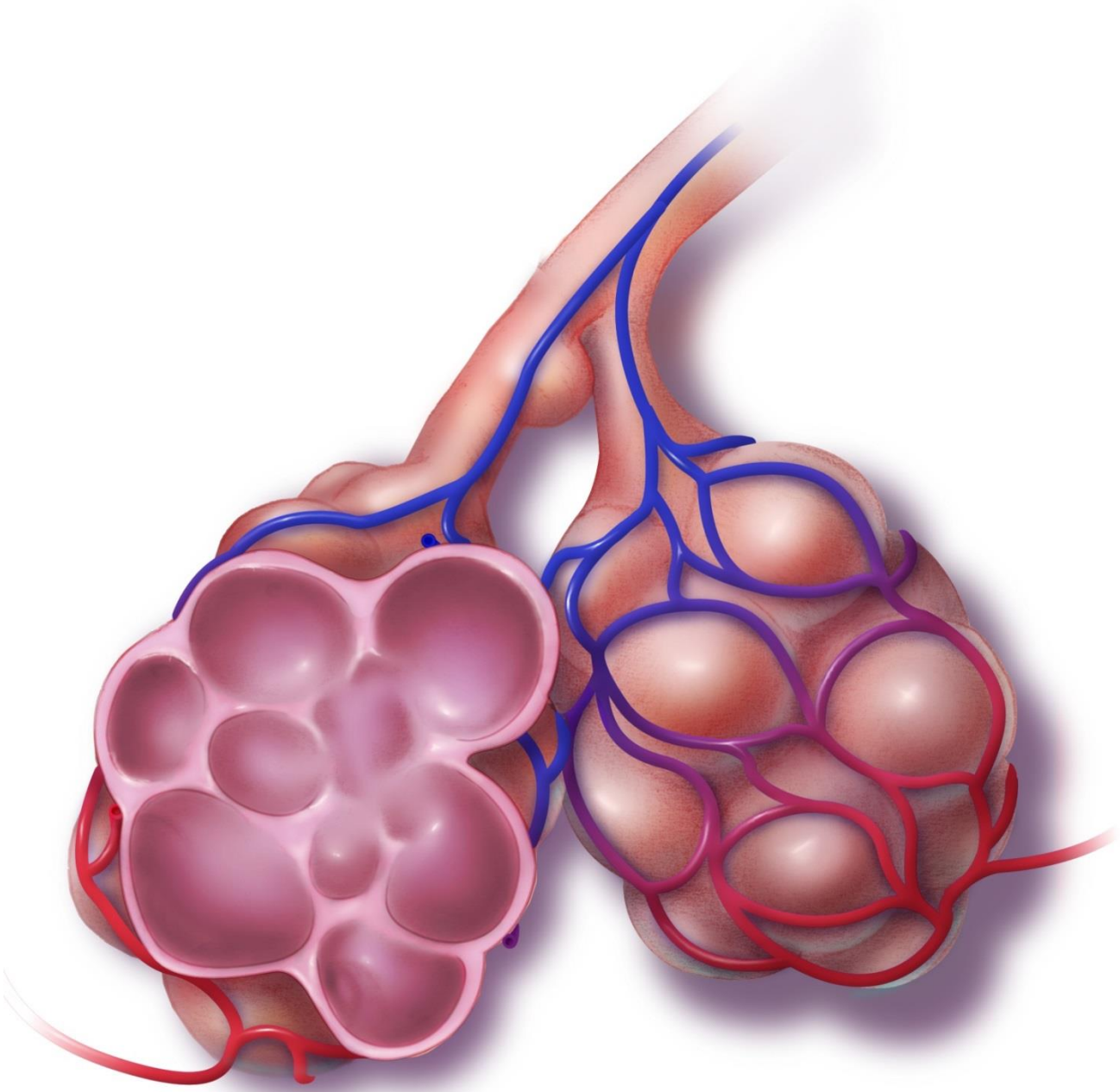


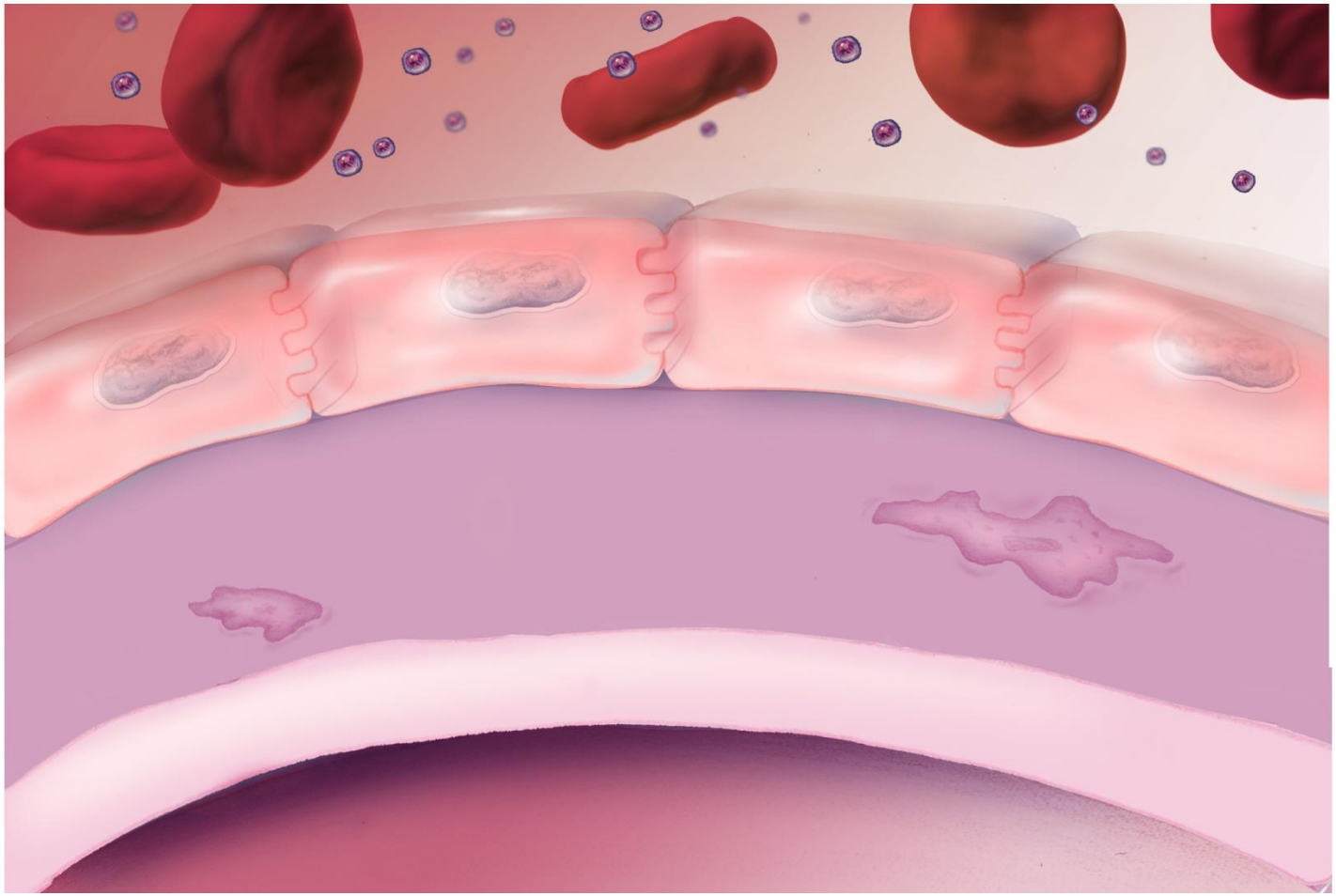
HPS Chest X-Ray

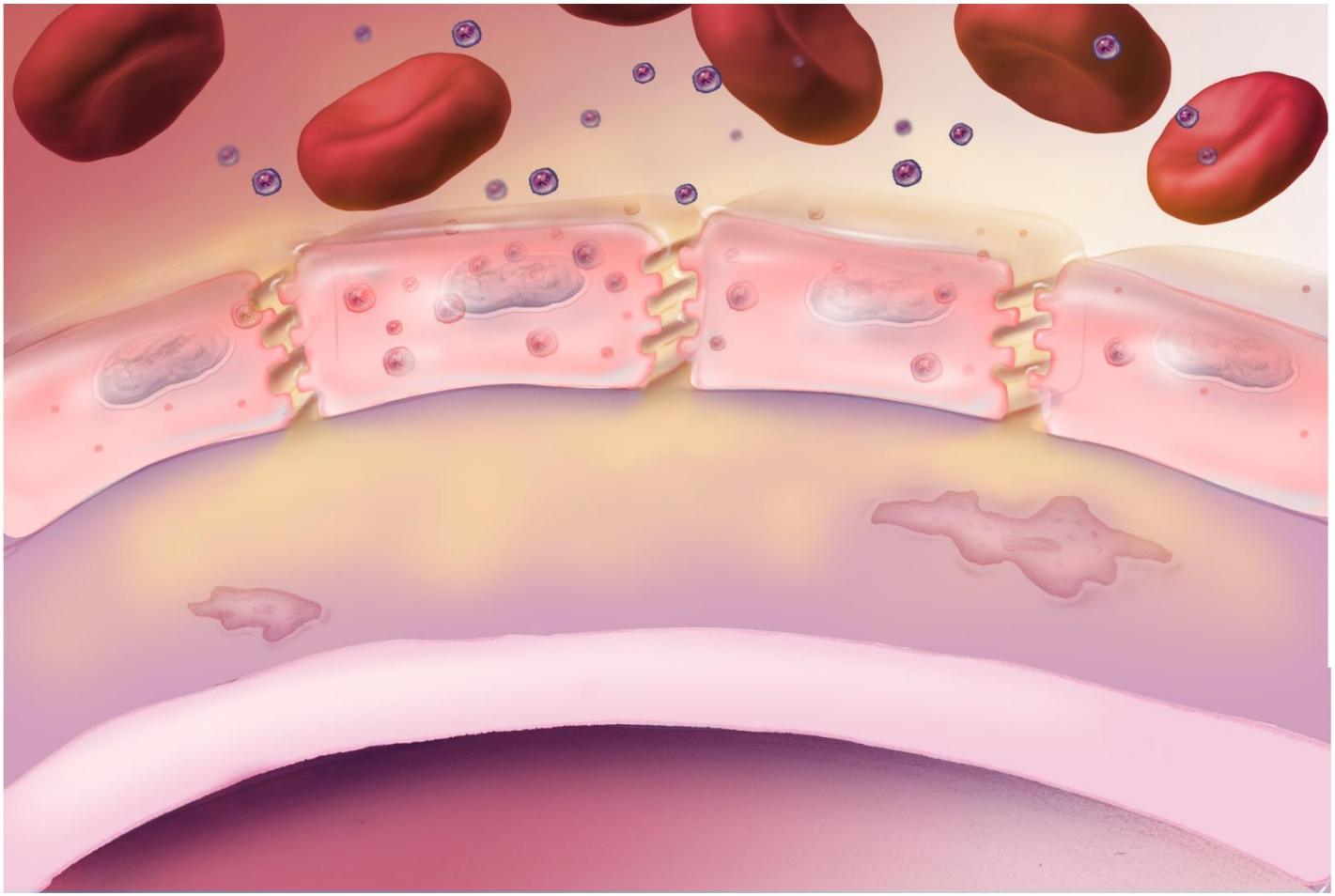






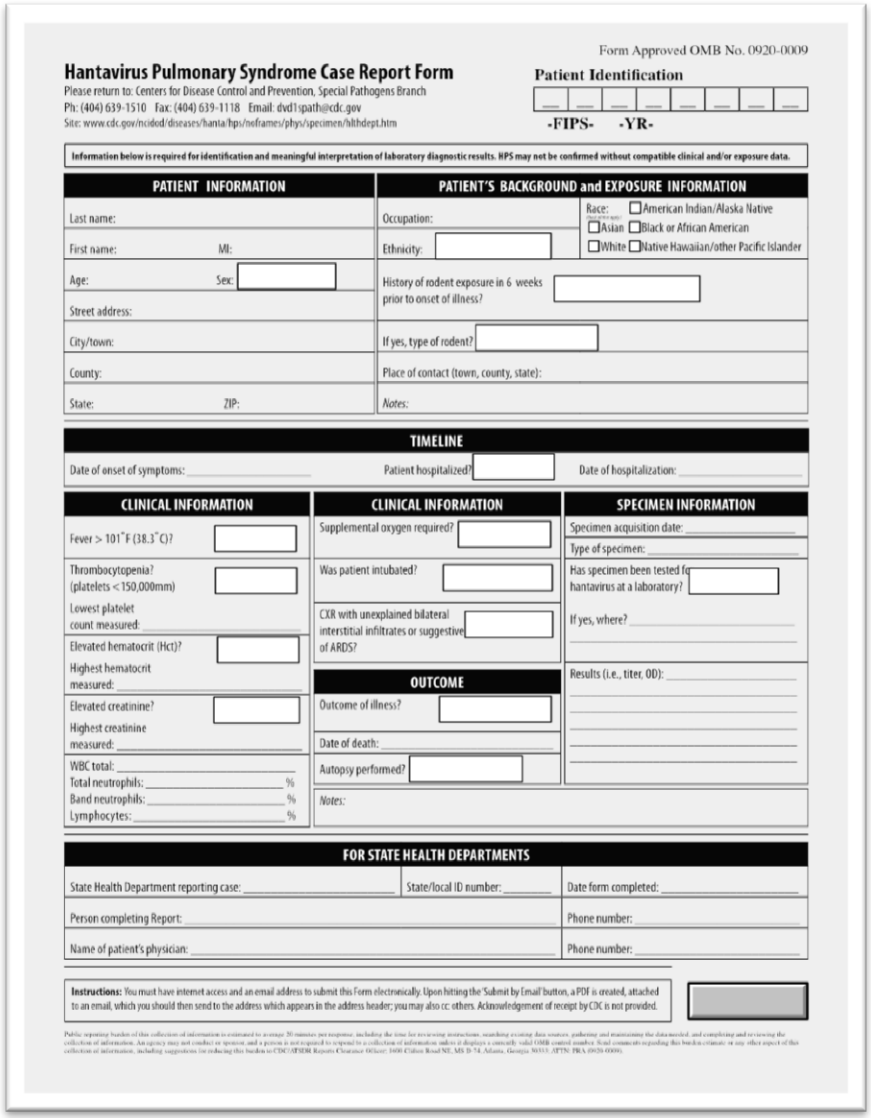






HPS Surveillance and Reporting

- Discovered in 1993
- ‘Retrospective’ diagnosis of prior cases (serologic evidence back to 1959)
- Notifiable disease in 1995. Case definition developed by Council of State & Territorial Epidemiologists and CDC: clinical case definition, suspect, probable, and confirmed
- HPS Registry:
  - Maintained by Viral Special Pathogens Branch (VSPB) since 1993
  - Systematically collect data on all confirmed HPS cases in the US through Case Report Form



Form Approved OMB No. 0920-0009

Hantavirus Pulmonary Syndrome Case Report Form

Please return to: Centers for Disease Control and Prevention, Special Pathogens Branch
Ph: (404) 639-1510 Fax: (404) 639-1118 Email: dvd1spath@cdc.gov
Site: www.cdc.gov/ncidod/diseases/hanta/hps/noframes/phys/specimen/hlthdept.htm

Patient Identification

-FIPS- -YR-

Information below is required for identification and meaningful interpretation of laboratory diagnostic results. HPS may not be confirmed without compatible clinical and/or exposure data.

PATIENT INFORMATION

Last name:
First name: MI:
Age: Sex:
Street address:
City/town:
County:
State: ZIP:

PATIENT'S BACKGROUND and EXPOSURE INFORMATION

Occupation:
Ethnicity:
Race: (Select one or more) ☐ American Indian/Alaska Native ☐ Asian ☐ Black or African American ☐ White ☐ Native Hawaiian/other Pacific Islander
History of rodent exposure in 6 weeks prior to onset of illness?
If yes, type of rodent?
Place of contact (town, county, state):
Notes:

TIMELINE

Date of onset of symptoms: Patient hospitalized? Date of hospitalization:

CLINICAL INFORMATION

Fever > 101˚F (38.3˚C)?
Thrombocytopenia? (platelets < 150,000mm)
Lowest platelet count measured:
Elevated hematocrit (Hct)?
Highest hematocrit measured:
Elevated creatinine?
Highest creatinine measured:
WBC total:
Total neutrophils: %
Band neutrophils: %
Lymphocytes: %

CLINICAL INFORMATION

Supplemental oxygen required?
Was patient intubated?
CXR with unexplained bilateral interstitial infiltrates or suggestive of ARDS?

OUTCOME

Outcome of illness?
Date of death:
Autopsy performed?
Notes:

SPECIMEN INFORMATION

Specimen acquisition date:
Type of specimen:
Has specimen been tested for hantavirus at a laboratory?
If yes, where?
Results (i.e., titer, OD):

FOR STATE HEALTH DEPARTMENTS

State Health Department reporting case: State/local ID number: Date form completed:
Person completing Report: Phone number:
Name of patient's physician: Phone number:

Instructions: You must have internet access and an email address to submit this Form electronically. Upon hitting the 'Submit by Email' button, a PDF is created, attached to an email, which you should then send to the address which appears in the address header; you may also cc others. Acknowledgment of receipt by CDC is not provided.

Public reporting burden of this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC/ATSDR Reports Clearance Officer; 1600 Clifton Road NE, MS D-74, Atlanta, Georgia 30333; ATTN: PRA (0920-0009).

HPS Surveillance and Reporting

States send notification
> 50 diseases in US

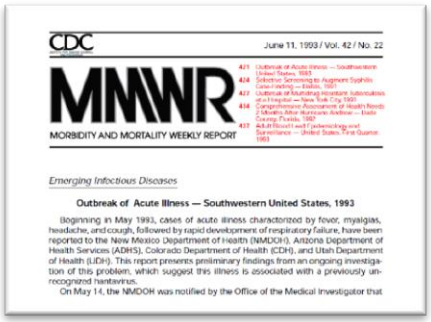
Diagnostic sample sent to VSPB

HPS confirmed at state or commercial lab

Data limited

HPS confirmed

State reports to VSPB


CDC

June 11, 1993 / Vol. 42 / No. 22

MMWR

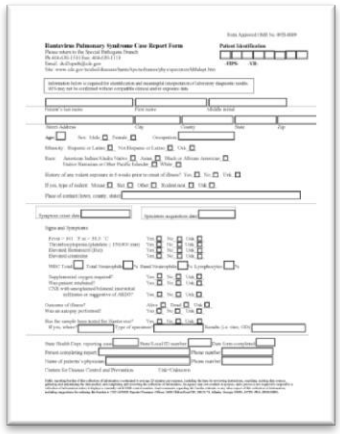
MORBIDITY AND MORTALITY WEEKLY REPORT

Emerging Infectious Diseases

Outbreak of Acute Illness — Southwestern United States, 1993

(Beginning in May 1993, cases of acute illness characterized by fever, myalgias, headache, and cough, followed by rapid development of respiratory failure, have been reported to the New Mexico Department of Health (NMDOH), Arizona Department of Health Services (ADHS), Colorado Department of Health (CDH), and Utah Department of Health (UDH). This report presents preliminary findings from an ongoing investigation of this problem, which suggest this illness is associated with a previously unrecognized hantavirus.

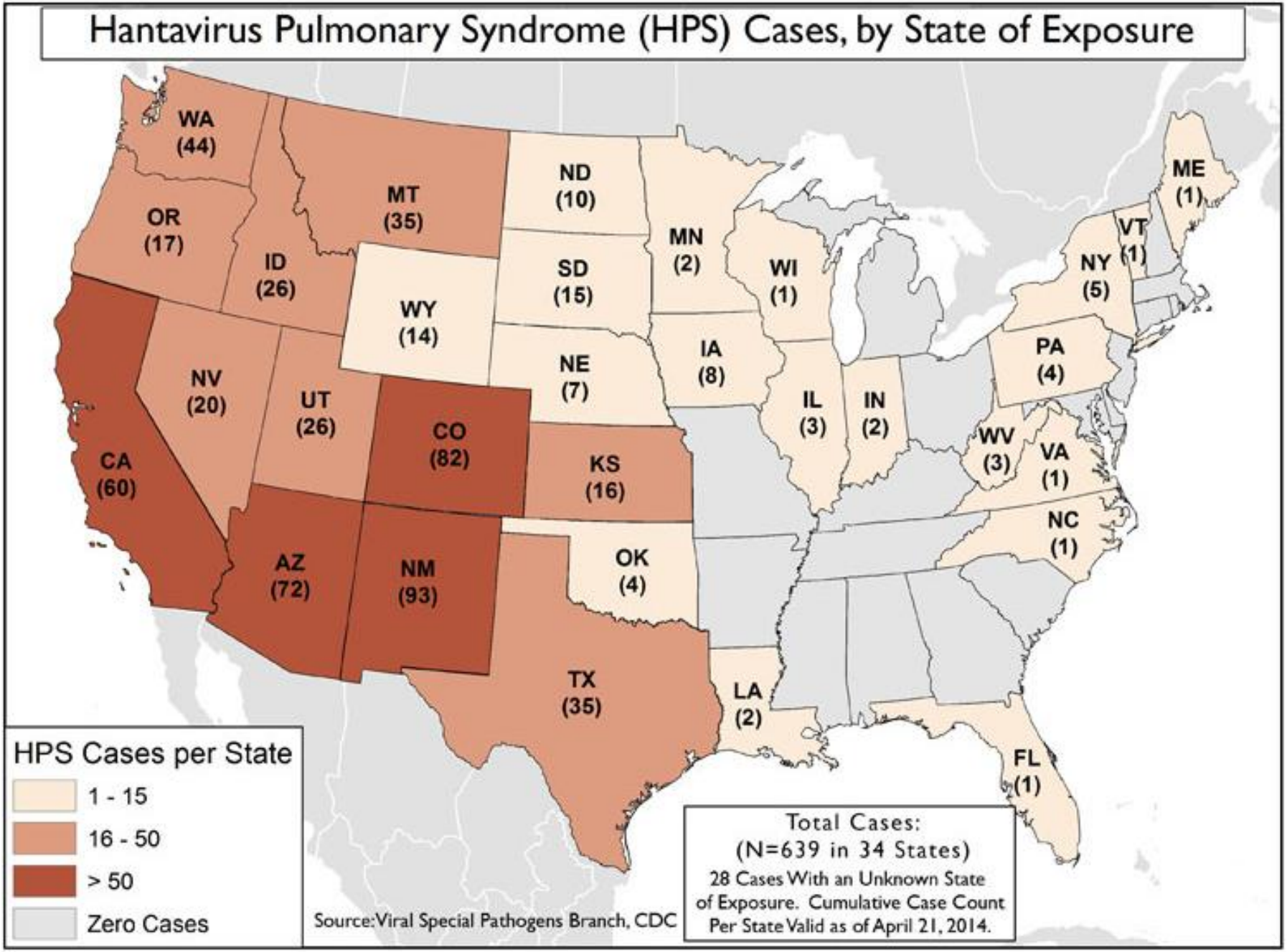
On May 14, the NMDOH was notified by the Office of the Medical Investigator that


Hantavirus Pulmonary Syndrome Case Report Form

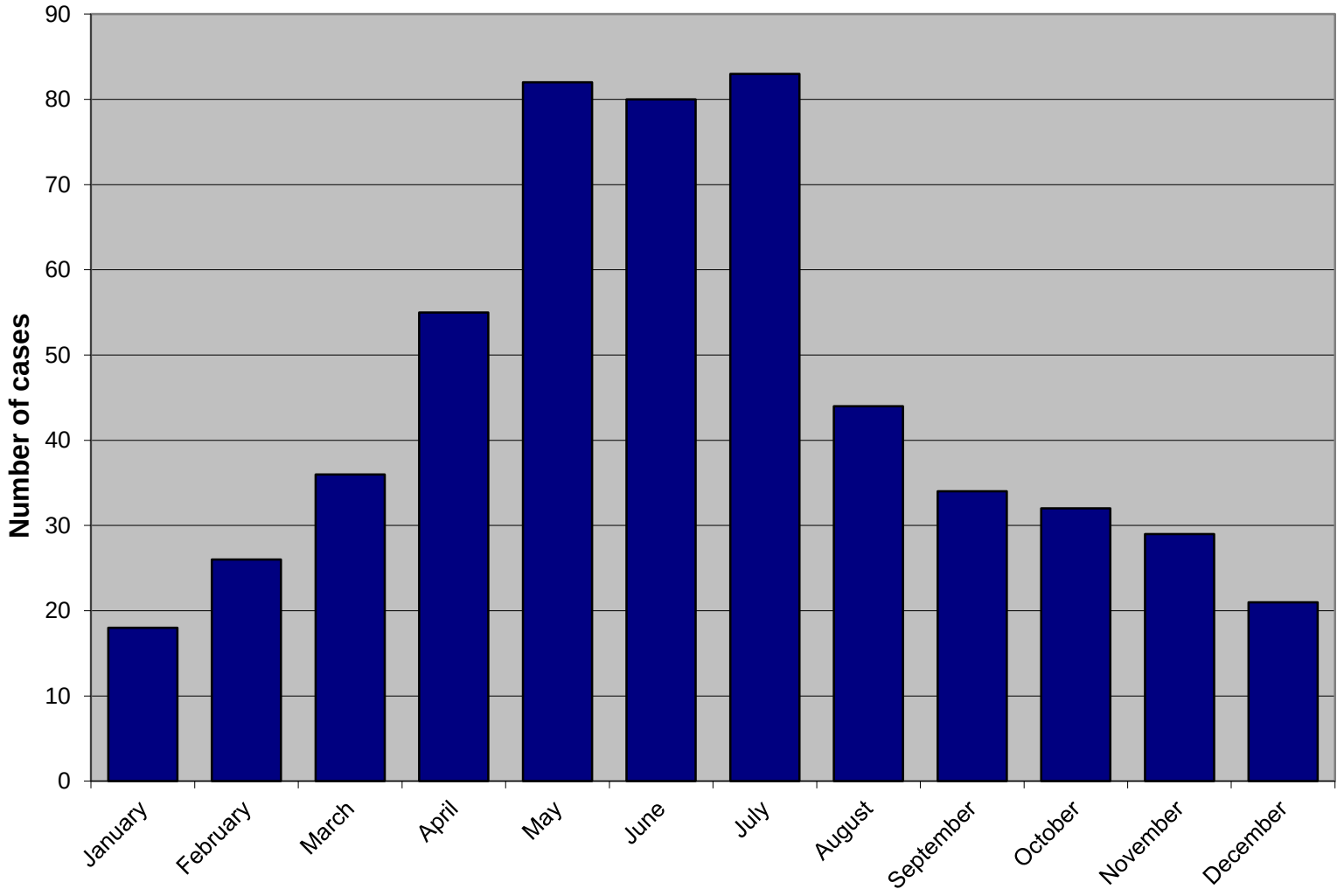
Patient Identification

National Notifiable Diseases (Published in MMWR)

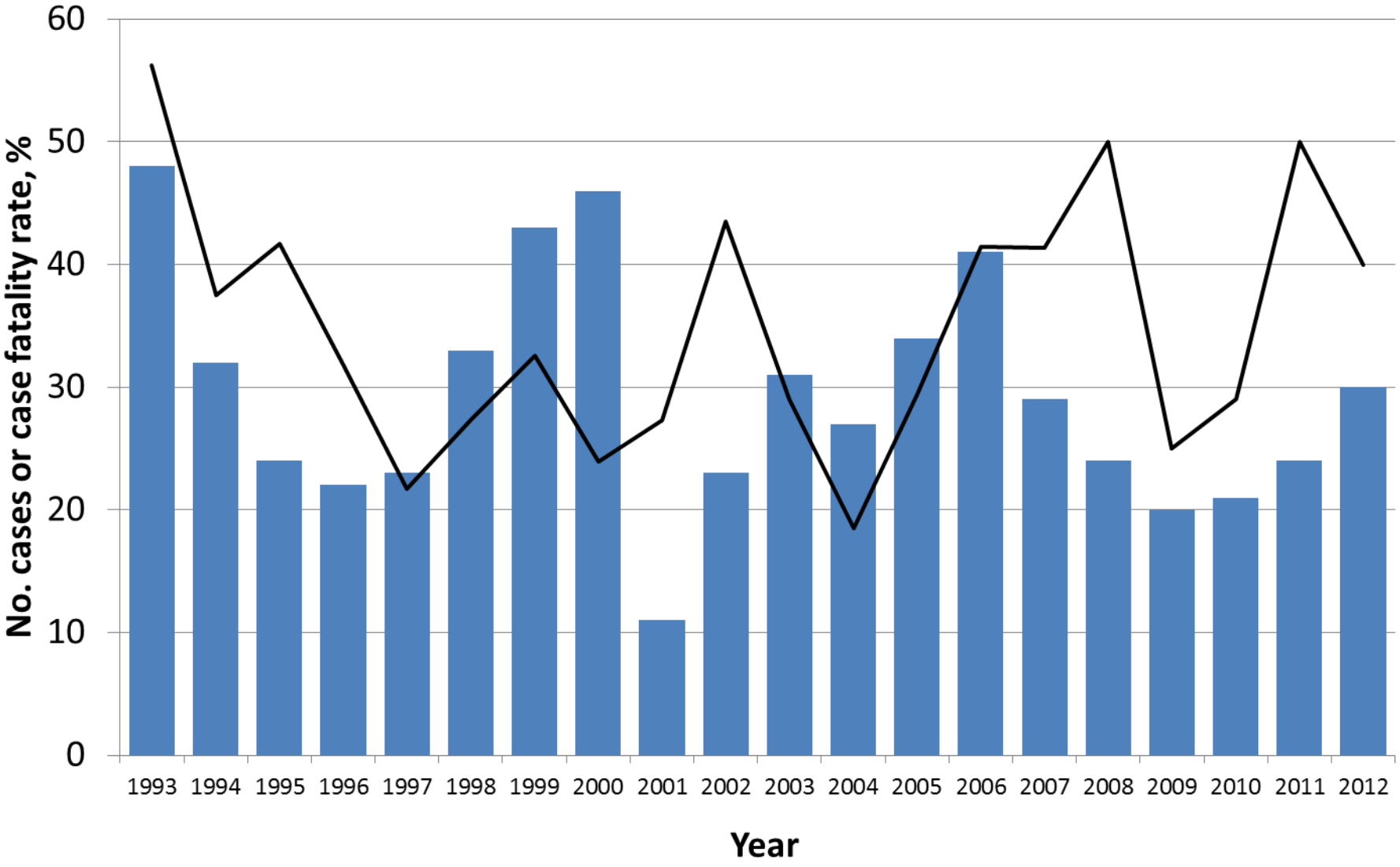
HPS Registry (Maintained by SPB)


Hantavirus Pulmonary Syndrome (HPS) Cases, by State of Exposure
WA (44)
OR (17)
CA (60)
ID (26)
NV (20)
MT (35)
WY (14)
UT (26)
AZ (72)
CO (82)
NM (93)
ND (10)
SD (15)
NE (7)
KS (16)
OK (4)
TX (35)
MN (2)
IA (8)
MO
AR
LA (2)
WI (1)
IL (3)
MS
IN (2)
KY
TN
AL
GA
FL (1)
SC
NC (1)
VA (1)
WV (3)
PA (4)
NY (5)
VT (1)
ME (1)
HPS Cases per State
1 - 15
16 - 50
> 50
Zero Cases
Source: Viral Special Pathogens Branch, CDC
Total Cases:
(N=639 in 34 States)
28 Cases With an Unknown State of Exposure. Cumulative Case Count Per State Valid as of April 21, 2014.

HPS cases by month of onset



Annual US HPS Cases and Fatality, 1993-2012



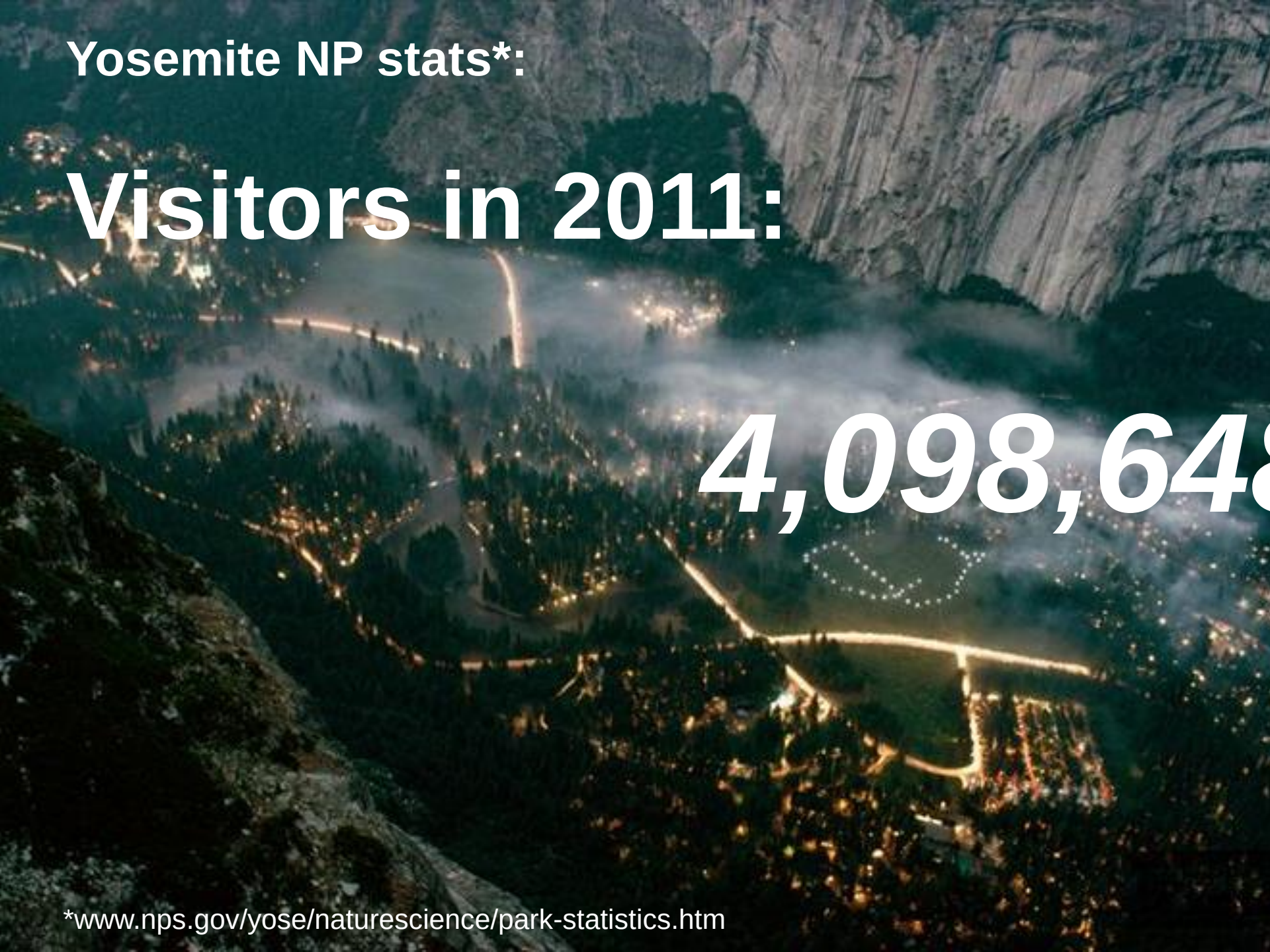
I. Introduction
II. HPS prevention: Clean up, trap up, seal up
III. Who is the Viral Special Pathogens Branch?
IV. Hantavirus/HPS refresher
V. **Yosemite HPS 2012**
VI. Health education collaborations with Diné College
VII. Next steps

CDC Hantavirus Investigation, Yosemite National Park 2012

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

Summary of Confirmed Cases

- 10 laboratory cases of hantavirus infection
  - 9 had pulmonary symptoms – HPS
  - 1 with mild illness – hantavirus infection
  - 3 cases fatal
- Age Range 12-56 years, 4 females
- 8 were CA residents, 1 from PA, 1 from WV



Yosemite NP stats*:

Visitors in 2011:

4,098,64

*www.nps.gov/yose/naturescience/park-statistics.htm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2014 Arizona Vector Control Workshop

2014 Arizona Vector Control Workshop


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Toilets & Showers
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Boystown Marker
Foot Bridge
Private Residence Cabins
Buses only past Backpackers Parking Lot
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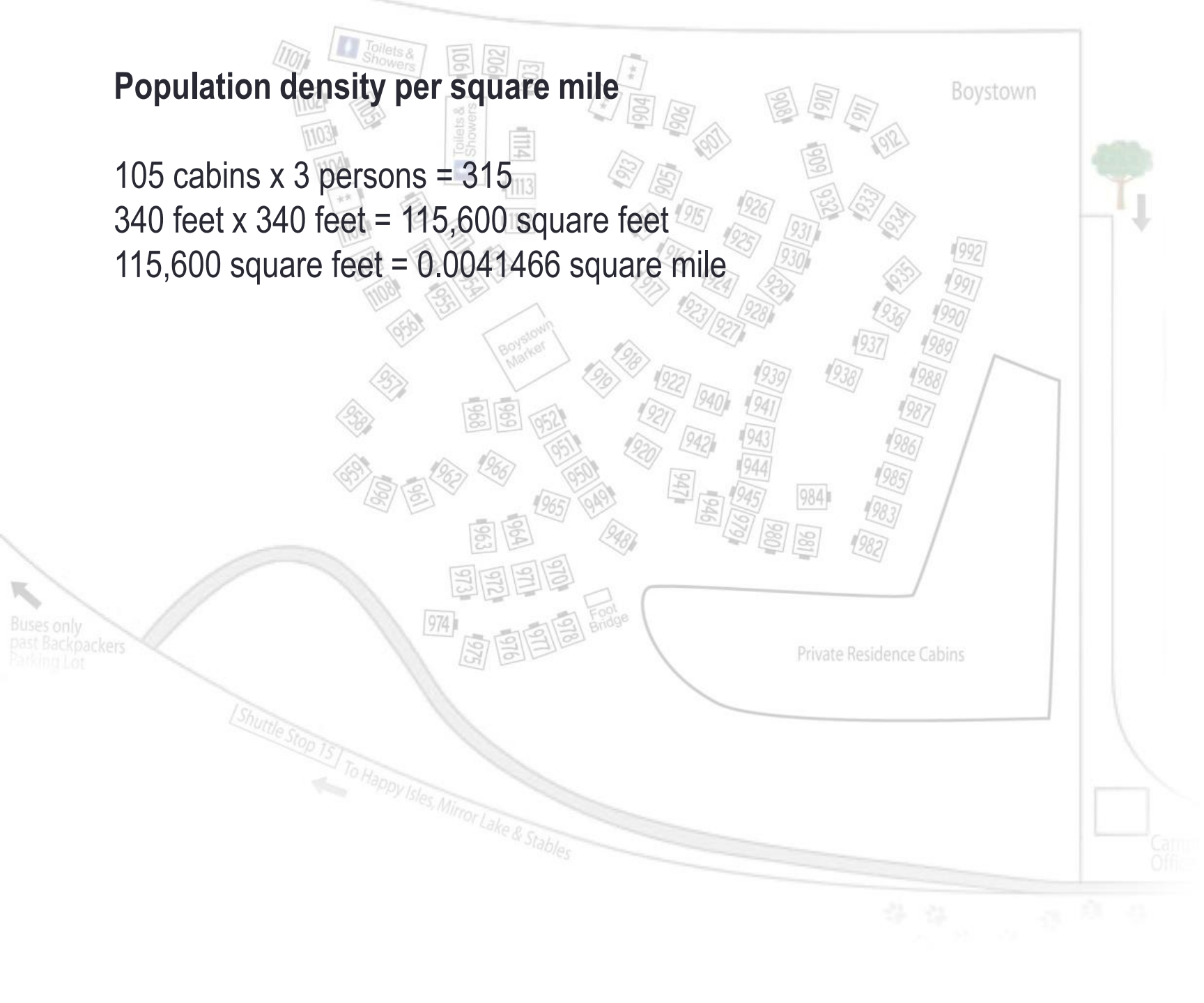
Population density per square mile

105 cabins x 3 persons = 315
340 feet x 340 feet = 115,600 square feet
115,600 square feet = 0.0041466 square mile

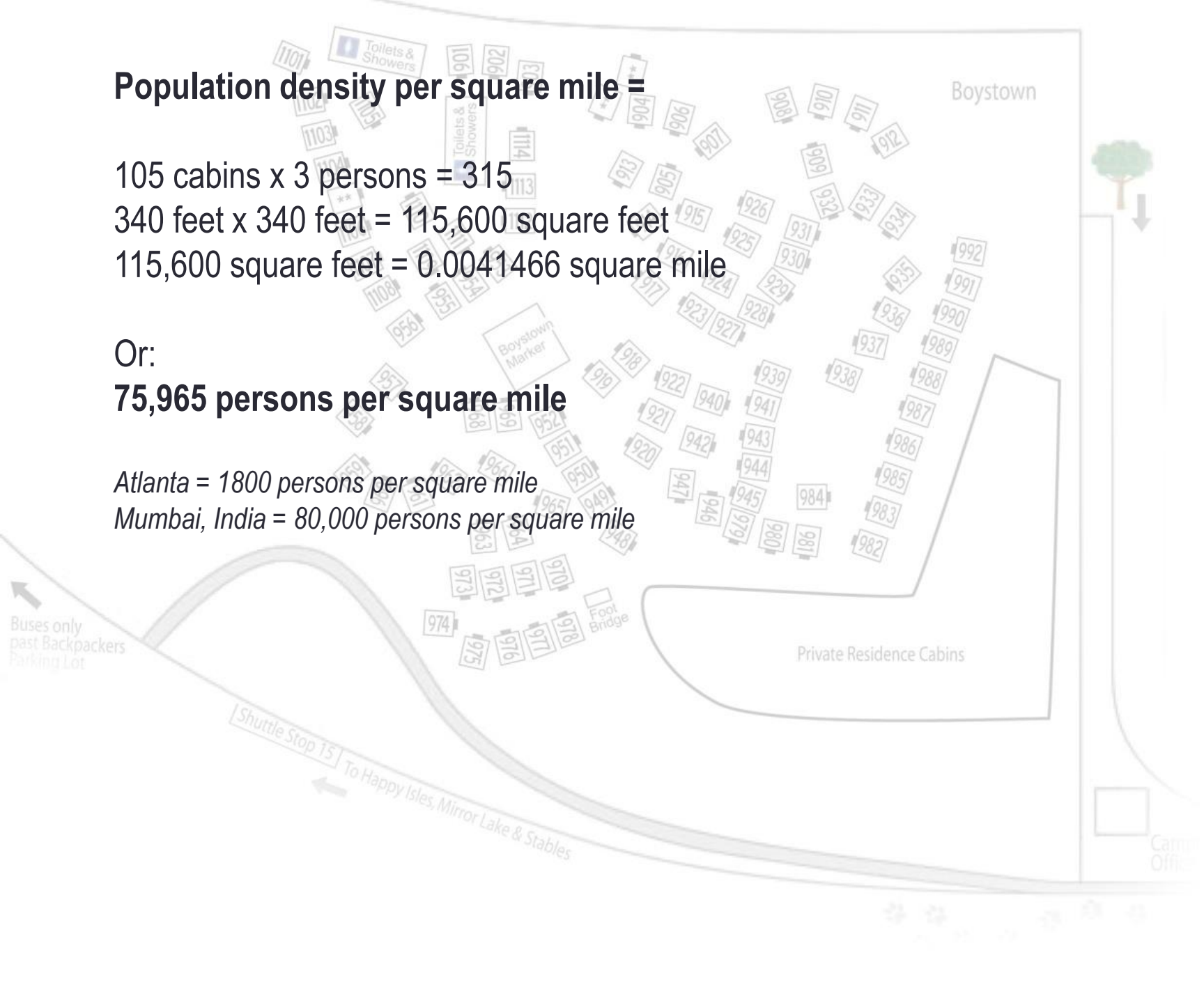


Population density per square mile =

105 cabins x 3 persons = 315
340 feet x 340 feet = 115,600 square feet
115,600 square feet = 0.0041466 square mile

Or:
75,965 persons per square mile

Atlanta = 1800 persons per square mile
Mumbai, India = 80,000 persons per square mile

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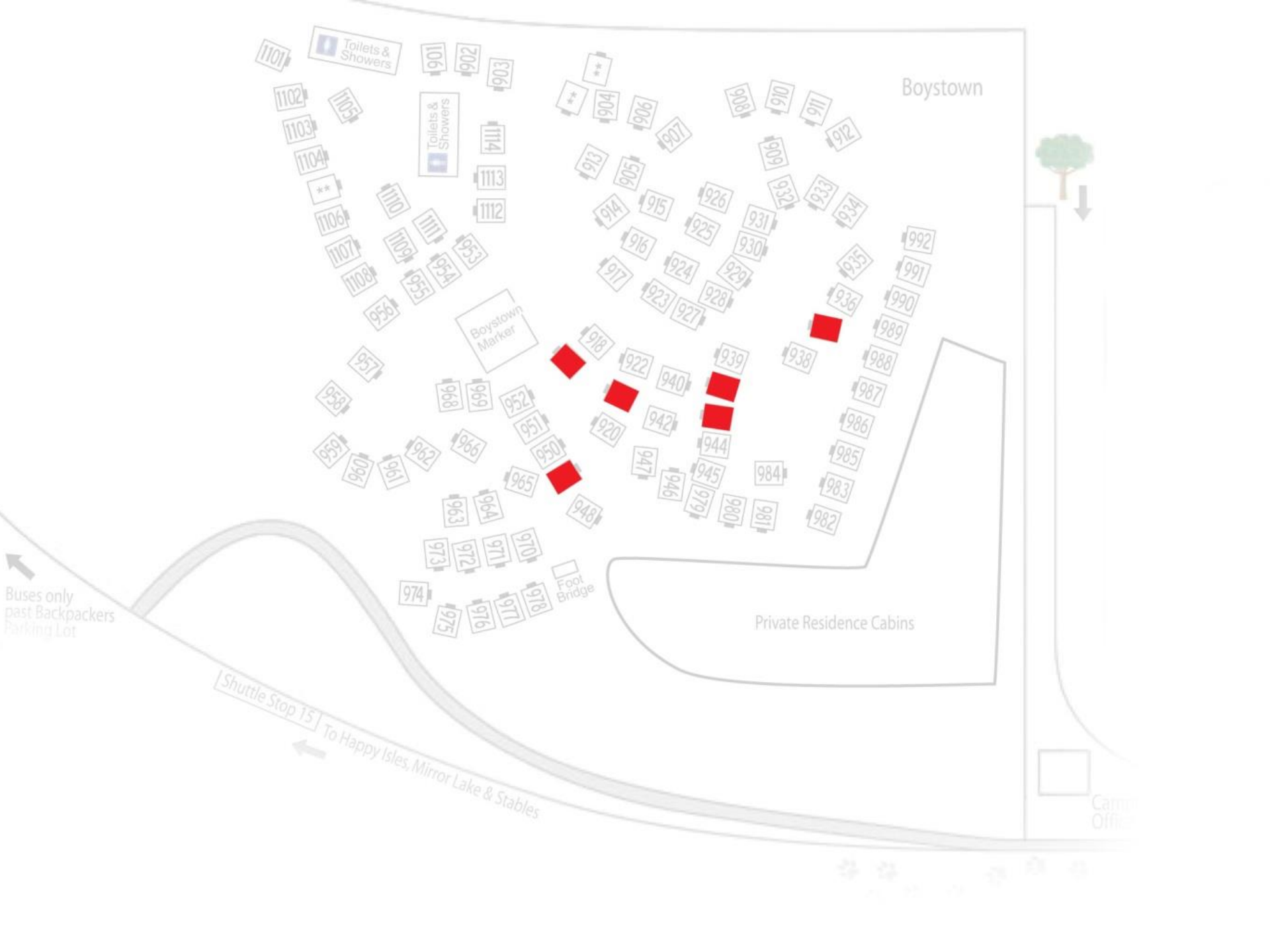
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FAQs Regarding Hantavirus Infection in Yosemite National Park for Non-U.S. Visitors to Yosemite

Updated: September 17, 2012

The questions and answers below pr
care providers regarding the risk of e
(HPS) among recent visitors to Yose

Yosemite National Park Hantavirus Infection Epi Curves

Updated: September 14, 2012

ors infected with Hantavirus Infection in 2012, by week of
set*

Jul 1 Jul 8 Jul 15 Jul 22 Jul 29 Aug 5 Au

Week of illness onset

2012. I never had any symptoms after returning
am not infected?
e CDC webpage in order to have Hantavirus
n Yosemite in August 2012. Can I become

CDC Home

Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People.™

A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

SEARCH

Hantavirus

- Hantavirus
- U.S. Rodents that Carry Hantavirus
- Hantavirus Pulmonary Syndrome (HPS)
- Hemorrhagic Fever with Renal Syndrome (HFRS)
- Reported Cases of HPS
- Information for Health Care Workers
- Technical/Clinical Information
- Resources
- Outbreaks
- ▶Yosemite National Park
  - Case Count Maps
  - Epi Curves
  - FAQ: U.S. Visitors to Yosemite
  - FAQ: Non-U.S. Visitors to Yosemite

Hantavirus > Outbreaks

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Email page link
Print page
Listen to audio/Podcast

Outbreak of Hantavirus Infection in Yosemite National Park

Updated: September 17, 2012

Highlights

- As of September 13, the National Park Service (NPS) has announced a total of 9 confirmed cases of hantavirus infection in people who recently visited Yosemite National Park.
  - The visitors to Yosemite are residents of: California (7), Pennsylvania (1), and West Virginia (1).
  - Three of the confirmed cases were fatal.
- NPS public health officials believe that 8 of the 9 people with confirmed hantavirus infection were exposed to the virus while staying at the Signature Tent Cabins in Curry Village in Yosemite National Park. The other park visitor with hantavirus infection was probably exposed to the virus while hiking or staying at the High Sierra Camps, located about 15 miles from Curry Village.
  - The park is contacting visitors who stayed in the Signature Tent Cabins from mid-June through the end of August, advising them to seek immediate medical attention if they exhibit symptoms of Hantavirus Pulmonary Syndrome (HPS), a rare but serious illness caused by hantavirus.
  - The park is also providing information about HPS risks and symptoms to visitors who stayed at the High Sierra Camps this summer.
  - On September 12, the park sent an additional notification on HPS to all overnight visitors to the park.
- CDC and the California Department of Public Health (CDPH) are working with NPS in responding to the situation.
  - The Signature Tent Cabins in Curry Village have been closed.
  - CDC is supporting the NPS response with testing of patient samples for evidence of hantavirus infection, providing guidance on clinical management of HPS and epidemiologic support for the response, and maintaining a Hantavirus Hotline for public inquiries.
  - The park is providing educational materials about hantavirus and HPS to all visitors to the park.

At a Glance:

- **Case Count: 9**
- **Deaths: 3**

FAQ: U.S. Visitors to Yosemite

FAQ: Non-U.S. Visitors to Yosemite

Related Links

- National Park Service (NPS): Hantavirus in Yosemite
- California Department of Public Health (CDPH)

Case Count (State of Residence) Map

Click map to view updated & previous case count maps.

Epi Curve

Click graph to view updated & previous epi curve graphs.

Get email updates
To receive email updates about this page, enter your email address:
What's this? Submit

Contact Us:

Centers for Disease Control and Prevention
Viral Special Pathogens Branch
1600 Clifton Rd
Atlanta, GA 30333

Hantavirus Hotline
(877) 232-3322
(404) 639-1510

800-CDC-INFO
(800-232-4636)
TTY: (888) 232-6348

cdcinfo@cdc.gov

About VSPB (Viral Special Pathogens Branch)

CDC 24/7 Saving Lives. Protecting People.™
LEARN MORE ABOUT HOW CDC WORKS FOR YOU.

Contact Information

CDC-INFO (1-800-CDC-INFO) provides information about hantavirus and HPS to callers in the United States.

CDC maintains a Hantavirus Hotline (877-232-3322 and 404-639-1510) and information about HPS on the **Hantavirus** website.

September 13, 2012

Case Count Update

The National Park Service (NPS) has announced that there are now 9 confirmed cases (including 3 deaths) of hantavirus infection in visitors to Yosemite National Park since June of this year. Eight of the nine individuals with hantavirus infection stayed in Yosemite's Signature Tent Cabins in Curry Village. The ninth person hiked and camped in Tuolumne Meadows and the High Sierra Camps, located about 15 miles from Curry Village.

Update: Hantavirus in Yosemite
From the National Park Service (NPS) website.

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DF - 443KB]
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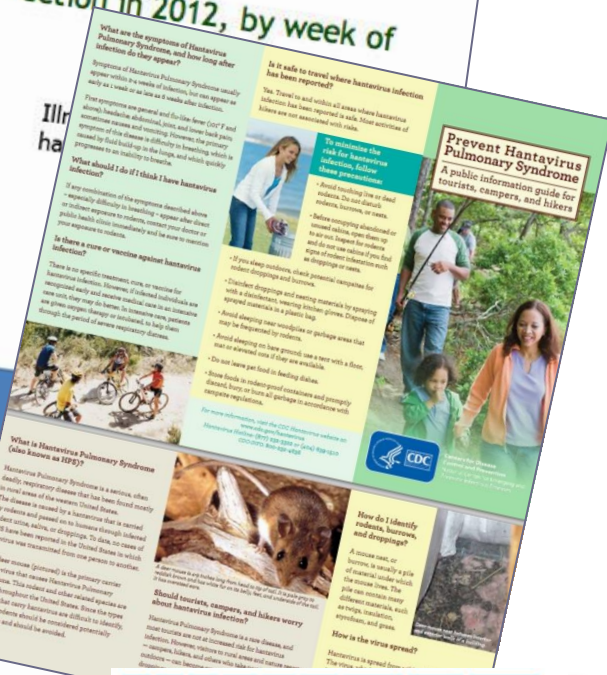
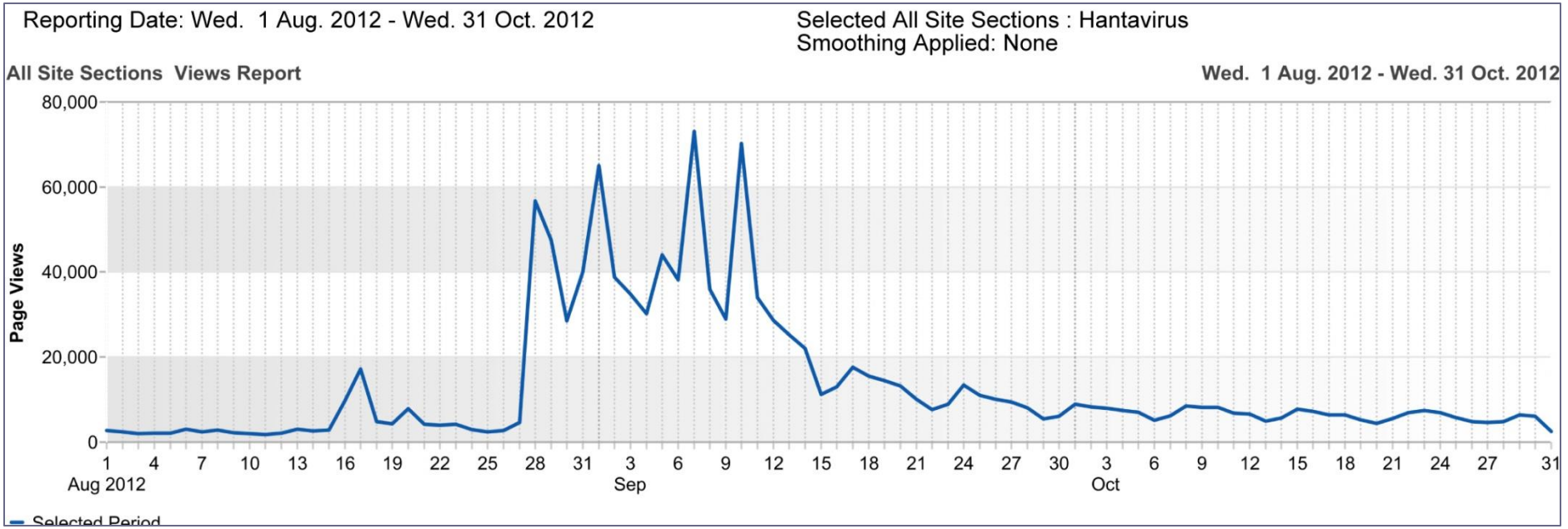


CDC
CENTERS FOR DISEASE™ CONTROL AND PREVENTION



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  - FAQ: Non-U.S. Visitors to Yosemite

Prevent Hantavirus Pulmonary Syndrome (HPS) [PDF - 443KB]
A public information guide for tourists, campers, and hikers.

Hantavirus > Outbreaks

Recommend 447 Tweet 133 Share

Outbreak of Hantavirus Infection in Yosemite National Park

Updated: September 17, 2012

Highlights

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- CDC and the California Department of Public Health (CDPH) are working with NPS in responding to the situation.
  - The Signature Tent Cabins in Curry Village have been closed.
  - CDC is supporting the NPS response with testing of patient samples for evidence of hantavirus infection, providing guidance on clinical management of HPS and epidemiologic support for the response, and maintaining a Hantavirus Hotline for public inquiries.
  - The park is providing educational materials about hantavirus and HPS to all visitors to the park.

Contact Information

CDC-INFO (1-800-CDC-INFO) provides information about hantavirus and HPS to callers in the United States.

CDC maintains a Hantavirus Hotline (877-232-3322 and 404-639-1510) and information about HPS on the **Hantavirus** website.

At a Glance:

- **Case Count: 9**
- **Deaths: 3**

FAQ: U.S. Visitors to Yosemite

FAQ: Non-U.S. Visitors to Yosemite

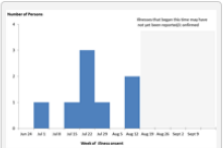
Related Links

- National Park Service (NPS): Hantavirus in Yosemite
- California Department of Public Health (CDPH)

Case Count (State of Residence) Map

Click map to view updated & previous case count maps.

Epi Curve



Click graph to view updated & previous epi curve graphs.

Email page link
Print page
Listen to audio/Podcast

Get email updates
To receive email updates about this page, enter your email address:

What's this? Submit

Contact Us:

Centers for Disease Control and Prevention
Viral Special Pathogens Branch
1600 Clifton Rd
Atlanta, GA 30333
Hantavirus Hotline
(877) 232-3322
(404) 639-1510
800-CDC-INFO
(800-232-4636)
TTY: (888) 232-6348
cdcinfo@cdc.gov
About VSPB (Viral Special Pathogens Branch)

CDC 24/7 Saving Lives. Protecting People.™
LEARN MORE ABOUT HOW CDC WORKS FOR YOU.

September 13, 2012

Case Count Update

The National Park Service (NPS) has announced that there are now 9 confirmed cases (including 3 deaths) of hantavirus infection in visitors to Yosemite National Park since June of this year. Eight of the nine individuals with hantavirus infection stayed in Yosemite's Signature Tent Cabins in Curry Village. The ninth person hiked and camped in Tuolumne Meadows and the High Sierra Camps, located about 15 miles from Curry Village.

Update: Hantavirus in Yosemite
From the National Park Service (NPS) website.

80 calls per day

Added 20 ‘surge’ staff to handle Yosemite calls

I. Introduction
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IV. Hantavirus/HPS refresher
V. Yosemite HPS 2012
VI. **Health education collaborations with Diné College**
VII. Next steps

CDC & Diné College health communications collaborations

CDC supports Diné College students enrolled in **Principles of Public Health** (Spring 2013/14) in making video/multimedia health communications products using both conventional and social media.

A trained workforce and informed citizens

2014 Arizona Vector Control Workshop

PUBLIC HEALTH (PUH)

PUH 111 Introduction to Public Health (3)
This course introduces students to all aspects of the field of public health, focusing on health promotion and disease prevention goals designed to establish and maintain healthy communities. The 3 core functions and 10 essential services of public health, as well as reading and lecture materials are organized and presented within the contexts of the Diné educational philosophy. This course is intended to help students become both knowledgeable and culturally competent public health professionals in the Navajo Nation.

PUH 141 Nutrition for Health (3)
Prerequisite: MTH 096 and concurrent ENG 100B.
General concepts of nutrition applied to food choices that support health; cultural, psychological, and economic implications of food choices. Current concepts and controversies in human nutrition. Carbohydrate, protein, lipids, vitamins, and minerals in nutrition, and the relation of nutrition to health throughout the life cycle.

PUH 191 Seminar in Public Health (3)
In this seminar, students are introduced to community health issues (especially in the Navajo Nation) and to problems faced in health care systems and health care delivery. Topics covered may include emergency services, the delivery and referral systems (both tribal and federal), and challenges, including alcohol use and abuse, illicit drug use, and mental health.

PUH 200 Principles of Health Education (3)
Prerequisite: Completion of FST 131 or reading proficiency requirement; PUH 111 and HEE 110 or concurrent enrollment.
This course introduces students to the field of health education. It explores social and behavioral theories, and determinants of health behavior of individuals and groups. In their final project students must apply course concepts to design a prospective health education intervention. Course emphases are on health education methods and issues relevant to the Navajo Nation. Guest speakers involved in health education on the Navajo Nation may provide presentations. Content of the course will facilitate application of the principles of SNBH.

PUH 201 Principles of Environmental Public Health (3)
Prerequisite: Completion of FST 131 PUH 111 or ENV 101 or another science class.
This course explores environmental health professionals' roles in ensuring safe and healthy environments, including sanitation, food safety, and occupational safety, and air and water quality. Policies and activities of federal, state, local, and tribal entities are examined, with a focus on Navajo examples. Navajo cultural beliefs related to nature and the environment provide the foundation on which the course is structured.

PUH 202 Uranium and Environmental Health (3)
Prerequisite: Completion of FST 131 or reading proficiency requirement.
This course examines the impacts of uranium and the uranium mining industry on the people and land of the Navajo Nation. The primary emphasis is on environmental public health effects and efforts to remediate them. The course covers comprehensive information on all aspects of uranium, the uranium industry, and the health effects of exposure to uranium.

PUH 241 Human Nutrition (3)
Prerequisite: CHM 130 (recommended).
The principle of human nutrition as it relates to health issues is the primary focus of this course. Emphasis is placed on nutrients and how they affect the human body. The structure and function, digestion and absorption, and metabolism of carbohydrates, lipids, proteins, minerals, and vitamins are discussed. This course also examines energy, weight-management, nutritional requirements of different age groups, U.S. dietary trends, and guidelines for good nutrition and health.

PUH 270 Community Health Assessment and Planning (3)
Prerequisite: Completion of ENG 100B and PUH 111.
This is the first of two courses in which students examine assessment, planning, implementation, and evaluation in public health practice. The course focuses on assessment and planning as carried out in epidemiology, environmental public health, health education and promotion, and health services administration. It explores Navajo ways of knowing, defining, and thinking about health problems (Nitsáhákees) and the process of planning (Nahat'á) health intervention programs.

PUH 275 Health Services and Policy (3)
Prerequisite: Completion of PUH 111, ENG 101 or concurrent enrollment.
In this course, students are introduced to health services administration and the role of policy development in public health. The course covers national, state, local, and Navajo Nation health services, focusing on how they are organized and administered. U.S. public health services are compared with those on the Navajo Nation and other tribal communities. The course is taught in accordance with the Diné educational philosophy (primarily in the realm of Iiná).

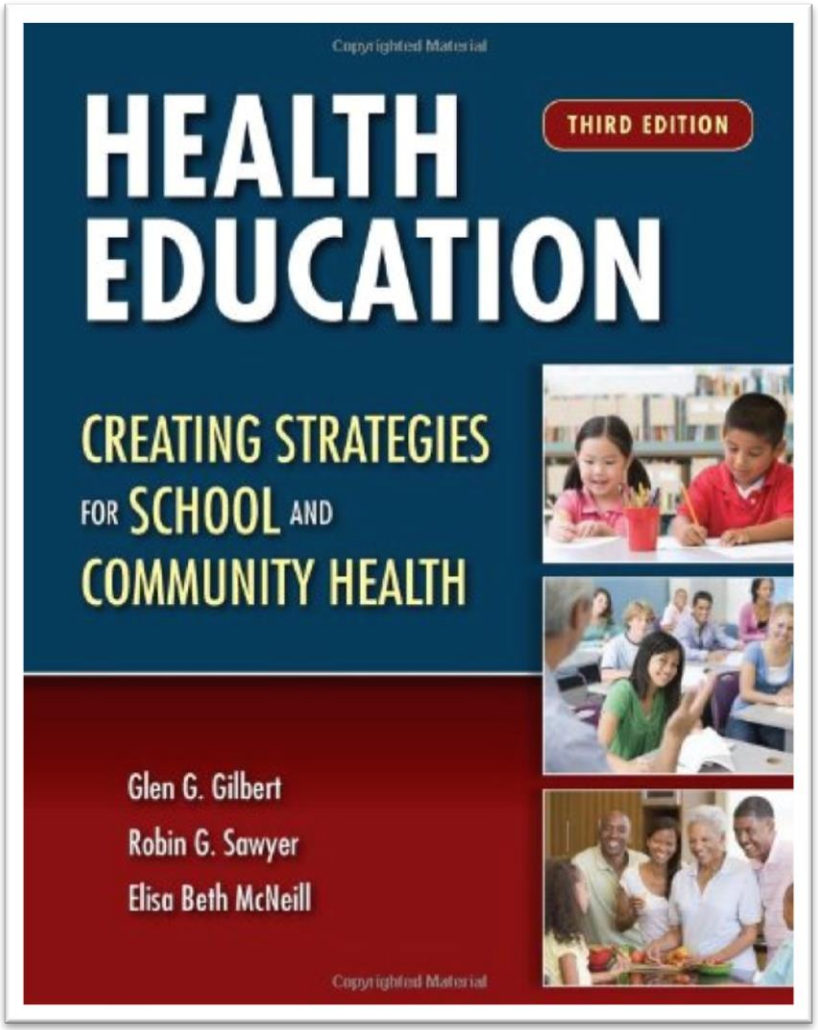
PUH 280 Implementation and Evaluation of Public Health Interventions (3)
Prerequisite: Completion of PUH 111 and PUH 270. Completion or concurrent enrollment in ENG 101.
This is the second of two courses in which students examine assessment, planning, implementation, and evaluation in public health. The course focuses on implementation and evaluation as carried out in epidemiology, environmental health, health education and promotion, and health services administration. It is taught in accordance with the Diné educational philosophy (primarily in the realm of Iiná and Siihasin).

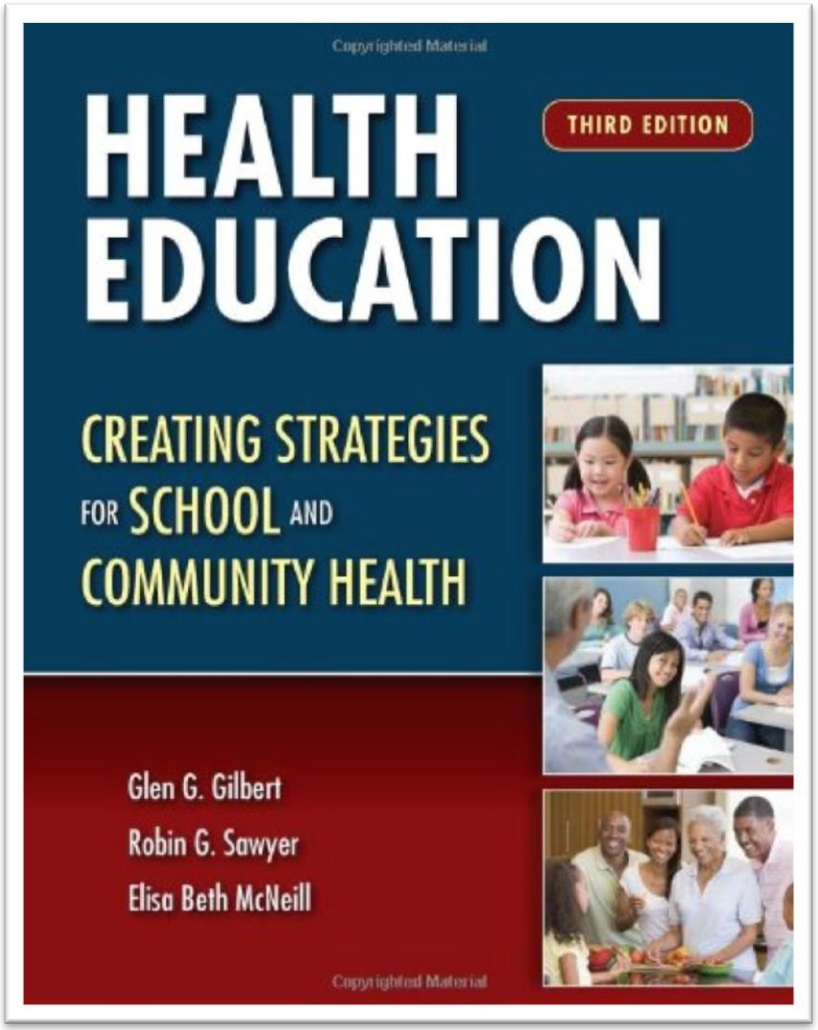
PUH 289 Public Health Emergency Preparedness (4)
This focused course covers practical knowledge, steps, and considerations relating to preparation for any potential public health emergency in the Navajo Nation. The course is based on online materials originally developed by the Arizona Center for Public Health Preparedness at the University of Arizona, adapted by Diné College to the Navajo Nation environment. There are no prerequisites, but prior completion of PUH 111 is recommended.

PUH 290 Public Health Research Methods (4)
Prerequisites: Knowledge of basic mathematical concepts (MTH 100), Biology (BIO 100 or above), and some computer literacy skills. ENG 101 and a Social and Behavioral Sciences course are recommended.
This research methods course covers basic concepts in public health, health promotion, and disease prevention, including its cultural aspects. The design and implementation of qualitative and quantitative research are covered, including hypothesis development, research design, development of research protocols, data analysis using computer software packages, and presentation of results.

PUH 295 Public Health Sciences (3)
Prerequisite: MTH 110 or MTH 118 and PUH 111
A basic introduction to epidemiology and biostatistics is provided in this mathematics-based course. Students are guided in identifying relevant and appropriate public health data and information sources. A special focus is on relationships of risk factors and disease outcomes, with attention to the health priorities of the Navajo Nation. The course also introduces students to epidemiological research designs and statistics, and ways in which they influence public health decision-making.

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION





Ch 7: Use of media in health education

- From previous chapters, use video to implement a health education strategy, develop source materials for dissemination, and apply a variety of communications methods and techniques to reach our audiences with appropriate health messages
- To do this, we must: state our objectives, define our audiences, determine level, language, content, cultural appropriateness, duration, interest, quality, resources

Why learn about making a video now?

- Connect theory (Ch. 3) to practice (Ch. 7: Use of Media in Health Education)
- Planning can start now
- Learning the tools (cameras, software) and techniques ("video thinking") can start now
- 2008 study by Rideout of "popular entertainment television *[being able]* to serve as a health educator"

So, how does this work? What's next?

- CDC provides 6 laptops and HD video cameras, with training, for PUH200
- Students form teams to develop **Communication Plans** for their videos, submitting them to Dr Bauer. (Craig will send sample Communications Plans to help.)
- Craig visits Diné College throughout Spring 2013, and for 2 weeks at the end of the semester, to teach and guide students in their projects, and can be reached by email when he's not in AZ/NM.
- Other CDC staff present to PUH200 students on health topics, including hantavirus/HPS.

Scriptwriting

- Review your Communications Plan document, especially on your audience(s)
- Review your notes from Dr Charley's presentations and the development of Dr Bauer's Communication Plan.
- Choose your approach: narrative, re-enactment, interview, dramatization, documentary
- Design your opening sequence: create interest/curiousity, suspense, open a door, start with audio only, pose a question, show an interesting activity, person.
- Start writing – 2 columns is helpful: left side for direction, right side for words.

Scriptwriting

2014 Arizona Vector Control Workshop

Diabetes 101
5 views 6 days ago

Food is Medicine
13 views 6 days ago

NBCS
8 views 1 week ago

My Movie
12 views 1 week ago

Motor Vehicle Crash Prevention in the Tuba Ci...
27 views 1 week ago

Pediatric Diabetes S2014
9 views 1 week ago

Melissa PUH Domestic Violence
40 views 1 week ago

Healthy Outcomes for pets and the Navajo people By...
7 views 1 week ago

TIME TO STOP DOMESTIC ABUSE BY FARRAH
9 views 1 week ago

Domestic Violence among the Dine Population
17 views 1 week ago

"Become a DD" -BY:Paulette Begay & Lynn Quinn

Tuberculosis on Navajo
21 views 1 week ago

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

The findings and conclusions in this presentation are those of the author(s) and do not necessarily represent the views of the Centers for Disease Control and Prevention.

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2013 - 14: Hantavirus/HPS activities planned

- ✓ Video on rodent exclusion for National Park Service
- ✓ Presentations at CSTE meeting in June, 2013
- ✓ Scientific presentations to microbiologists, epidemiologists
- ✓ Diné College public health course participation in HE
- Grand Rounds at NDOH
- Collaborations with Navajo Epidemiology Center

CONCLUSIONS

Strategic

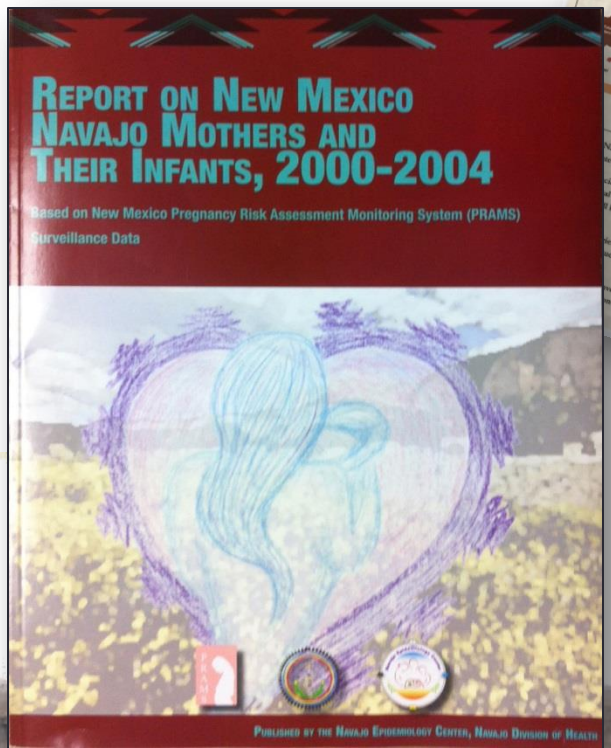
- **Health ed/comm projects do not require NN IRB approval.**
- **Flexibility and patience are helpful.**

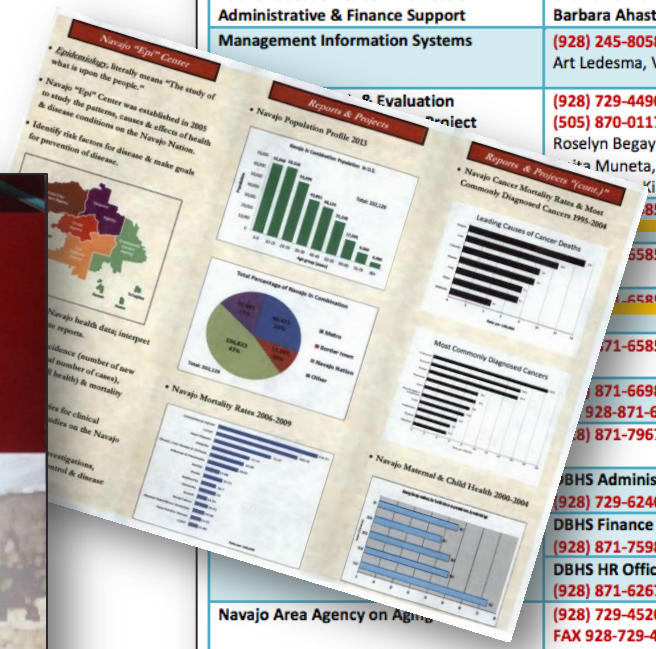
Implementation

- Student media literacy is high.
- Integration of new health communications technology tools into public health curricula can be effective.
- Student/CHRs have a solid local understanding of community health issues.
- *Some* students struggled with the technology and messaging; working in pairs helped.
- Repeating the connection between book learning/theoretical instruction and practical activity is helpful for students.

Next steps

1. Participate in 'Principles of Public Health' in Spring 2014
2. Partner with Navajo Epidemiology Center:
   - Tech assistance in GIS, online and print publication





Navajo Division of Health Directory

Relocation of Administrative Offices effective January 7, 2013

TEMPORARY PHONE NUMBERS & LOCATIONS

UPDATED 2-6-13

Executive Administration **Public Health Support** **Legislative Affairs** **Public Education & Communication** **Administrative & Finance Support**	**(928) 871-6968** **Larry Curley, Madan Poudel** **Galye Dine' Chacon, Sonlatsa Jim-Martin** **Charlotte Francis, Ella Nez, Aaron Anderson** **Barbara Ahasteen, Thelma Tso**	**AML Building (temporary)** **Window Rock, AZ**
Management Information Systems	**(928) 245-8058 / (928) 245-4254** Art Ledesma, Vernon Livingston	**Wellness Center Office** Window Rock, AZ
& Evaluation **oject**	**(928) 729-4490** **(505) 870-0117 / (928) 241-1399** Roselyn Begay, Sylvia Haskie, Eddie Bikeddy a Muneta, Ernie Yazzie (928) 309-9458 Kimberly Smith	**DBHS Agency OTC Modular Building** Fort Defiance, AZ
	85	**EPA Building, Window Rock, AZ**
	6585	**EPA Building, Window Rock, AZ** DBHS Office, Gallup, NM
	6585	**EPA Building, Window Rock, AZ**
	871-6698 **928-871-6251**	**Census Building, Window Rock, AZ**
	8) 871-7967	**Census Building, Window Rock, AZ**
	BHS Administration **(928) 729-6240**	**DBHS Agency OTC Building** Fort Defiance, AZ
	DBHS Finance Office **(928) 871-7598**	**Census Building** Window Rock, AZ
	DBHS HR Office **(928) 871-6267**	**Quality Inn Complex** Window Rock, AZ
Navajo Area Agency on Ag	**(928) 729-4520** **FAX 928-729-4531**	**NN Facilities Maintenance Building** State Highway 12 #2431 Ft. Defiance, AZ
Community Health Representatives & Outreach	**(928) 729-4027** **FAX 928-729-4152**	**CHR Agency Training Center** Fort Defiance, AZ
Navajo Special Diabetes Project	**(928) 871-6532** NDOH Staff Development/HR: Victoria Davis, Ricky Smith	**Log Office behind Navajoland Inn** 392 Arizona Hwy 264 St. Michaels, AZ
Navajo Food Distribution	**(505) 905-8426**	**FDP Agency Warehouse Facility** East Historic Hwy 66 - 2 miles east of Interstate 40/ Route 66 intersection (mile marker 28) Church Rock, NM

Thanks!

- CDC Office of State, Tribal, Local and Territorial Support
- Dr. Gayle Diné-Chacon, UNM
- Ramona Antone-Nez, Director, Navajo Epidemiology Center
- Dr. Mark C. Bauer, Diné College
- Dr. Pierre Rollin, CDC

VSPB contact information:

Craig Manning, Health Communications:

email: fte9@cdc.gov Office: (404) 639-1989

HPS Prevention

- Clean Up
  - Use gloves and disinfectant to clean up rodents, droppings, or nesting materials
  - Well-ventilated space
- Trap Up
  - Snap traps located properly
- Seal Up
  - Reduce rodent access to buildings, eliminate harborage sites
  - *Most important intervention for prevention*